

GRANITEVILLE MILL
Marshall St.
Graniteville
Aiken County
South Carolina

HAER No. SC-27

HAER
SC
2-GRANV,
1-

PHOTOGRAPHS

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Historic American Engineering Record
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HISTORIC AMERICAN ENGINEERING RECORD

GRANITEVILLE MILL

HAER No. SC-27

HAER
SC
2-GRANV,
1-

Location: Graniteville, Aiken County, South Carolina

Dates of Construction: 1846-1849; 1865; 1938

Builder: Graniteville Manufacturing Company

Present Owner: Avondale Mills, Inc.

Present Use: Storage

Significance: Graniteville Mill was one of the largest mills in the South during the antebellum period. The original mill, canal, school house, and a number of original Gothic Revival houses are still extant at Graniteville and form the core of a National Historic Landmark community. The granite mill building and canal system constructed in the late 1840s represent an early example of technology transfer from the New England textile industry to the South. The company-owned mill village of hotel, stores, boarding houses, and Gothic Revival single family dwellings at Graniteville established a community structure that would become widespread throughout the Piedmont South during the late nineteenth century. The initial success and subsequent longevity of Graniteville's textile industry have enabled this important example of pre-Civil War Southern industrial development to survive to the present.

Historian: Lisa Pfueller Davidson, Robert Stewart (Part II: Graniteville Manufacturing Technology)

Project Information: The Southern Textile Industry Project of the Historic American Engineering Record began studying Graniteville, South Carolina during 1997. Dean Herrin (HAER Historian, Washington, DC) was project leader. In the summer and fall of 1998, research was conducted by Lisa Pfueller Davidson (HAER Historian, Washington, DC) and Robert Stewart (Historical Technologies, Connecticut). In September 1998, HAER Photographer Jet Lowe took large format photographs. Preliminary fieldwork for architectural drawings was done by Thomas Behrens (HAER Architect, Washington, DC) in September 1999 with assistance from Lisa Davidson and Robert Stewart.

Early Southern Industry: The Architecture and History of the Graniteville Mill

In October, 1846, the foundation stone of the Factory was laid, and the first works of improvement commenced. It would inspire the visitor to see how much has been done since that time. The rude forest has been cleared, streets laid out, canals cut, embankments thrown up, malls graded and tastefully laid out, saw-mills, machine shops, stores, offices, dwellings for operatives and factory houses erected; and all put in such a state of forwardness, as already to present the appearance of a flourishing and busy village.

-Charleston Courier, March 23, 1848

Industrial development in the antebellum South is often viewed by historians as either sporadic or virtually non-existent. The history of Graniteville Manufacturing Company complicates the perception that Southerners relied completely on slave labor-based agriculture. Well before the post-Civil War rise of the "New South" and turn-of-the-century Southern dominance of cotton textile production, Graniteville demonstrated the textile manufacturing potential of the Southern states. Located in the South Carolina midlands along the Horse Creek Valley, Graniteville Manufacturing Company turned a sparsely populated section of the Edgefield District (now Aiken County) into one of the South's largest antebellum cotton mills. Six miles from the town of Aiken and twelve miles from the cotton markets of Augusta, Georgia, Graniteville was established in an isolated, but advantageous location. The initial success and subsequent longevity of Graniteville's textile industry have enabled this important example of pre-Civil War Southern industrial development to survive to the present. The original mill, canal, school house, and a number of original houses are still extant at Graniteville and form the core of a National Historic Landmark community.

Graniteville's success is often credited entirely to the vision and labor of its founder, William Gregg. Gregg's biographer, economic historian Broadus Mitchell, called the industrialist "the South's first great bourgeois, the forerunner of a new era." Most historical information written about Graniteville Mill is dominated by praise for William Gregg.¹ While the scholarship

¹See Broadus Mitchell. *William Gregg: Factory Master of the Old South*. Chapel Hill: University of North Carolina Press, 1928. In addition to Mitchell's biography, other secondary sources about Graniteville that emphasize William Gregg's contribution are August Kohn's *The Cotton Mills of South Carolina*. (Columbia: South Carolina Department of Agriculture, Commerce and Immigration, 1907) and *The Water Powers of South Carolina* (Charleston: Walker, Evans & Cogswell Co., 1911); Ernest MacPherson Lander, Jr. *The Textile Industry in Antebellum South Carolina*. (Baton Rouge: Louisiana State University Press, 1969); Leavelle McCampbell *Graniteville, 1845-1935* (Graniteville, SC: Graniteville Manufacturing Company, 1935); and David D. Wallace "The Founding of Graniteville" *Cotton History Review* 1 (January 1960): 19-25.

on William Gregg yields useful information on the history of mill itself, this report emphasizes the history of the mill architecture and community infrastructure. However, Graniteville was foremost the creation of William Gregg, and his background and role in the mill's founding must also be considered.

William Gregg's biography tells the rags-to-riches story of an orphan who became the founder of the South's most important antebellum cotton mill. Gregg was born in 1800 in what is now West Virginia and his mother died when he was four-years-old. After living with a neighbor, ten-year-old Gregg was sent to live with his uncle, Jacob Gregg, in Alexandria, Virginia and learn the watchmaking trade. During the War of 1812, Jacob Gregg abandoned watchmaking to build a cotton mill in Georgia, one of the first. When the mill failed due to the flood of imports at the close of the war, Gregg's uncle sent his young nephew to Lexington, Kentucky to apprentice with a watchmaker and silversmith. Twelve-year-old Gregg's brief exposure to cotton manufacturing through his uncle's failed endeavor is often credited with creating a lasting interest in the field. Gregg went to Columbia, South Carolina and established himself in business in 1824. He married Marina Jones in 1829. His wife was from Edgefield District and it was through this family connection that Gregg became familiar with the area that was to become Graniteville. He also acquired part-ownership of the Vaucluse Mill in the Edgefield District in 1837 with his brother-in-law General James Jones. Although successful, Gregg's initial experiment with Vaucluse was short-lived; by December 1837 he had relinquished his shares. By 1838 when he moved to Charleston and became partner in the jewelry and silver firm of Hayden, Gregg & Co., his fortune was secure.²

It was this financial security that allowed Gregg to indulge his interest in textile manufacturing. Gregg embarked on a serious study of the industry, traveling North during the summer of 1844 to examine numerous textile mills in Massachusetts, Connecticut, Vermont, and New Hampshire.³ There were several cotton mills in South Carolina by the 1830s, but these ventures were largely undercapitalized and prone to failure. As Gregg became convinced that with proper planning and knowledgeable supervision textile production could be conducted profitably in South Carolina, he began publicly promoting this cause. In the fall of 1844, Gregg anonymously published twelve articles in the *Charleston Courier* and shortly after he published the group in pamphlet form under his own name.⁴

In his *Essays on Domestic Industry*, Gregg forcefully described the necessity for textile manufacturing in South Carolina. In the introduction to the pamphlet collection of essays published in 1845, Gregg stated:

²Mitchell, *William Gregg*, 3-9.

³William Gregg, *Essays on Domestic Industry*, (Graniteville, SC: Graniteville Company, 1941 (reprint of 1845 ed.)), 6.

⁴Lander, *Textile Industry*, 51-52; Gregg, *Essays on Domestic Industry*, 4.

I firmly believe, that our advantages are such as to enable us to compete successfully with any country, now engaged in the manufacture of Coarse Cotton Fabrics. We have the materials among us, which, set in motion by this branch of industry, would create an energy that would revolutionize our State, morally and physically, - uproot the immense forests that now cover the fairest portion of our soil, . . . shake the very foundation of beds of granite that abound in all parts of our State.⁵

Gregg became committed to the idea that South Carolina was wasting its potential by shipping raw cotton to the North and buying back finished goods at exorbitant prices. Keeping local capital within South Carolina would diversify the state's heavy reliance on cotton growing and provide jobs for the poor whites excluded from the slave-labor economy:

Let the manufacture of cotton be commenced among us, and we shall soon see the capital that has been sent out of our State, to be invested in Georgia State, and other foreign stocks, returned to us. We shall see the hidden treasures that have been locked up, unproductive and rusting, coming forth to put machinery in motion, and to give profitable employment to the present unproductive labor of our country.⁶

Gregg was arguing against the doubts of the prevailing power structure of South Carolina politics. Dominated by cotton and rice planters, the Charleston elite that Gregg was addressing saw manufacturing as a risky and unsavory enterprise. Gregg argued that manufacturing would not simply make them more like the North, but give Southerners independence from their economically dominant Northern neighbors.

Gregg's opinions about properly creating a community of ready labor for a cotton mill also foreshadow his actions when building the town of Graniteville. In discussing the comparative virtues of slave versus poor white labor, Gregg acknowledged the suitability of slave labor for textile production, but asks "shall we pass unnoticed the thousands of poor, ignorant, degraded white people among us, who, in this land of plenty, live in comparative nakedness and starvation?"⁷ His response to his own question was a classic mix of philanthropy and hard-headed business acumen. Gregg wrote: "It is only necessary to build a manufacturing village of shanties, in a healthy location in any part of the State, to have crowds of these poor people around you,

⁵Gregg, *Essays on Domestic Industry*, 4.

⁶*Ibid.*, 33.

⁷*Ibid.*, 48.

seeking employment at half the compensation given to operatives at the North.”⁸ The development of a mill community for a stable source of labor was a common feature of New England mills a generation earlier, but the scope and execution of Gregg’s proposal was unprecedented in the South in the 1840s.

As an outgrowth of interest in his *Essays*, Gregg began to assemble a group of supporters and prepared to petition the South Carolina State Legislature for a charter of incorporation. Unsure of his chances for success in South Carolina, Gregg simultaneously petitioned the state of Georgia for a charter. In December 1845 the charter was granted by the South Carolina State Legislature that allowed the Graniteville Manufacturing Company to take subscriptions for \$300,000 worth of capital. Gregg’s success in South Carolina was fortunate, given Georgia’s rejection of his charter request. The success of the South Carolina effort is often credited to William Gregg’s good business reputation, personal lobbying of legislators, and his intention to personally oversee the mill’s construction and operation. Having authorization to raise \$300,000 of capital was also a key accomplishment for Gregg. This amount of capitalization was unusually large for a Southern mill at this time. For example, Vaucluse Mill was capitalized at \$50,000 and Marlborough Factory near Bennetville, S.C. at \$25,000.⁹ Graniteville Manufacturing Company could be established on a firm footing, and not be undercapitalized like many of the failed Southern manufacturing ventures that Gregg criticized in his *Essays on Domestic Industry*.¹⁰

Creating a Capitalist Utopia: Building Graniteville

The proposed Graniteville company quickly attracted a sufficient number of wealthy supporters, mainly drawn from sympathetic members of the Charleston elite. Twenty of the first thirty-two stockholders were Charlestonians who held over 50% of the shares.¹¹ Correspondence between John Springs III of the York District of South Carolina and other early stockholders provides insights regarding the initial planning of Graniteville.¹² Hiram Hutchinson was President of the Bank of Hamburg in Edgefield District, one of the largest stockholders, and soon to be on the Graniteville board of directors. He described the company’s goals on January 8, 1846 as first to select a location, and second, to build a “saw mill and keep it turning about 12 months and pile up plank and scantlin for our buildings. In the meantime arrangements will be made for a large

⁸Ibid., 49.

⁹Solon Robinson, “Statistics of Southern Cotton Factories,” *DeBow’s Commercial Review* 7:5 (November 1849): 457-458.

¹⁰Lander, 55-56; Mitchell, *William Gregg*, 33-39.

¹¹Lander, 57.

¹²For information on Graniteville stockholders John Springs III and Hiram Hutchinson, see Lacy K. Ford, Jr., “The Tale of Two Entrepreneurs in the Old South: John Springs III and Hiram Hutchinson of the South Carolina Upcountry,” *South Carolina Historical Magazine* 95:3 (July 1994): 198-224.

manufacturing building of stone foundation and then stone or brick as may be thought best."¹³

William Gregg and Charleston banker Ker Boyce, another original stockholder, owned approximately 9,000 acres in the Horse Creek valley near Aiken that was offered to the company at a "low price." Gregg was familiar with the area from his work at Vacluse Mill, and probably had it in mind when describing the general regional potential in his *Essays on Domestic Industry*: "In the most healthy regions of the State, abounding with granite and building timber, water power may be found, sufficient to work up half the crop of South Carolina, all of which is nearly valueless at the present time."¹⁴ The first preliminary Graniteville Manufacturing Company stockholders meeting was held in Aiken, South Carolina on January 14, 1846. The company was officially organized in March 1846 and commenced with development on part of a 7,952-acre parcel of Horse Creek land that had been purchased for \$11,000. Construction of the canal and dams began immediately, with Gregg supervising, assisted by Julius Petsch, former foreman of a Charleston iron foundry.¹⁵

In June of that year another letter from Hutchinson to Springs described the progress: "The whole capital is to be subscribed by or before the 1st of July - the present stockholders taking the balance more or less that is then lacking; and also that William Gregg be nominated to see about contracting for the machinery, contracting for the mane [sic.] building of stone; in short, all things necessary to go ahead! We expect to start the saws in June. The canal and dams are progressing..."¹⁶ As these letters reflect, Gregg's vision of a well-planned enterprise prevailed here; much initial effort was expended establishing a strong financial footing and supporting infrastructure before mill construction began. However, although the entire \$300,000 of capital was pledged by 1847, Gregg borrowed large sums of money to cover cash shortfalls until all the pledges were finally paid in 1849.¹⁷

In May 1846, Gregg advertised for masons and carpenters to build the factory.¹⁸ Gregg supposedly designed the mill himself, although no original drawings or contract specifications seem to have survived. Although some mill engineers existed in New England, vernacular

¹³Hiram Hutchinson to John Springs III, 8 January 1846, Springs Family Papers, Southern Historical Collection (hereafter SHC), University of North Carolina at Chapel Hill.

¹⁴Gregg, *Essays on Domestic Industry*, 35.

¹⁵Lander, 58.

¹⁶Hiram Hutchinson to John Springs III, 18 June 1846, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

¹⁷Lander, 57.

¹⁸*Ibid.*, 58.

traditions of industrial construction commonly prevailed during the antebellum era. Owners normally relied on their own knowledge or the practical experience of local builders and carpenters. Gregg's opinions on the necessity for a professional mill engineer make his role in the design of the mill clear:

Having made manufacturing a study from 1837 to 1845, I felt that I was fully competent to the task of rearing this work without the aid of manufacturing engineers, a class of men generally employed for such purposes, but, who would necessarily be strangers in our country, whose undivided services would be obtained at a high cost, and who might prove to be impracticable, wasteful, or possibly worse, speculative, aiming solely to make money on their own account, out of us.¹⁹

Gregg's travels in New England would have made him well acquainted with the mill construction of that region; he also had written extensively about specific mill operations in his *Essays*.

Construction at Graniteville utilized locally available material such as granite and pine. As a canal was dug to direct the water power of Horse Creek for the mill, granite was quarried from the canal bed to line the canal walls and construct the mill building. The canal started at Horse Creek almost a mile upstream from the mill site, and was 15 feet wide at the bottom, 37 on the surface, and about 5 feet deep.²⁰ Sawmills at the site, spoken of by Hutchinson as an important priority, milled lumber for temporary dams, worker housing, and the mill interior. Key to all of these projects, and the subsequent success of the mill was the efficient use of water power. The water motive power of the original Graniteville Mill determined both the location and form of the original structure, a common feature of the textile industry until the last quarter of the nineteenth century.²¹

Under Gregg's watchful eye, construction progressed at Graniteville with a Col. Timanns as superintendent of building. The sawmill was cutting lumber for the mill, and related buildings such as warehouses, worker houses and the hotel. In October 1846 Hiram Hutchinson visited Graniteville and described the progress in a letter to John Springs:

I went to Graniteville where every thing is in full blast. Three saws flying and the foundation of the main building have just been begun. There are some 70 to 80

¹⁹William Gregg, *Reports of the President & Treasurer of the Graniteville Manufacturing Co.* (Augusta, GA: Constitutionalist Book and Job Printing Office, 1867), 2.

²⁰"Graniteville Manufacturing Co." *Charleston Courier* 23 March 1848, 2.

²¹See Stephen Greene, "The Influence of Motive Power on the Design of Cotton Mills," *Cassier's Magazine* 16 (July 1899): 203-206.

persons at work in all.... The canal is not finished, the water of the two creeks will soon be in the canal as far as the sawmill.²²

Ten days later, Hutchinson visited Graniteville again, reporting that the mill foundation and dams were now complete.²³

Construction slowed during the winter; at the end of March 1847 the mill building was only complete up to the window sills.²⁴ A fire in the drying house destroyed 20,000 feet of lumber, so replacements were purchased to allow construction to continue uninterrupted. Workmen continued to quarry local granite for the mill. In April 1847 Hutchinson described the masonry construction process at Graniteville: "They have opened a fine quarry on Horse Creek about two miles from the building and boat the stone down the canal, and then put it on a Railroad which takes the stone even with the second story or rather above it."²⁵ Using the canal to transport building materials seems to have sped construction, and Graniteville Mill was built mainly between April to October 1847.

Another letter in the Springs family collection from John J. Blackwood, a Bank of Hamburg official, provides an useful detailed account of Graniteville in November 1847:

On Saturday I visited Graniteville for the first time since the spring, and was much surprised as well as pleased with the progress they have made, and the generally improved appearance of things. The stone work of the main building is finished and they have the walls of the "picker house" up to the top of the first windows.

Blackwood goes on to describe how the roof was partially enclosed with shingles and would be finished shortly, and substantial floors were being laid to withstand the weight of the machinery. He assessed the mill's design as "looks from the outside rather low, but inside it seems very roomy so well lighted and ventilated as to be admirably suited for the intended purpose."

The water powered turbine most impressed Blackwood: "The most interesting object to

²²Hiram Hutchinson to John Springs III, 20 October 1846, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

²³Hiram Hutchinson to John Springs III, 31 October 1846, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

²⁴Hiram Hutchinson to John Springs III, 1 April 1847, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

²⁵Hiram Hutchinson to John Springs III, 27 April 1847, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

me however is the new style water wheel that he [Gregg] is employing. They were just putting it down in its watery bed the day I was there - and consequently I had a chance of seeing it as it is to act. It is of French origin I believe and is called the "Turbine" probably after the inventor....If it succeeds, you may judge what our advantage [sic.] it will be over every other wheel." This visit made Blackwood, a minor stockholder, newly enthusiastic about the potential of Graniteville, confiding to Springs that he was "disposed to think better of the enterprise - though the extensive buildings and the delay to get to work have not been agreeable to my taste."²⁶ In January 1848, Blackwood reported to Springs that tests of the turbine had proved very satisfactory, generating 125 horsepower. The production machinery was supposed to arrive that month as well, but there was a delay receiving it.²⁷ Another October 1847 description in Daniel Cannon Webb's diary praised the nearly complete mill after he traveled through Graniteville. He declared that "in the great undertaking the energy and enterprise of New England was rivaled."²⁸

Other construction problems arose by the spring of 1848. The carpenter "left his contract to be completed by incompetent workers." In June Gregg arranged to have the floor taken up and replaced properly.²⁹ The window sashes had to be replaced as well, although the contract carpenter eventually covered the replacement expense.³⁰ Perhaps because of these problems, Gregg moved his family to Kalmia, his new estate outside Graniteville, so he could personally oversee construction on a daily basis. The mason, William Murdoch, also left his job unfinished and then sued for payment, prompting Hiram Hutchinson to write, "I am rejoiced the day is so near at hand when we will have done with all builders."³¹

In addition to building the factory, at Graniteville Gregg needed to establish the infrastructure for transportation and power generation critical for viable manufacturing. These systems were not developed as fully in the South as the New England sites Gregg toured. He personally negotiated with Col. James Gadsden of the South Carolina Railroad to obtain service

²⁶John J. Blackwood to John Springs III, 8 November 1847, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

²⁷John J. Blackwood to John Springs III, 20 January 1848, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

²⁸Cited in Wallace, "The Founding of Graniteville;" See Bob Stewart's portion of this report for detailed analysis of the water power system at Graniteville.

²⁹Hiram Hutchinson to John Springs III, 10 June 1848, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

³⁰Gregg, *President's Report 1867*, 5.

³¹Hiram Hutchinson to John Springs III, 10 June 1848, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

for the relatively remote Graniteville location. In June 1847 Gadsden approved Gregg's proposal for a branch road to Graniteville, but with a number of conditions. The project was to cost the railroad no more than \$2,000, with the right of way given free by the Graniteville Company. The company would be charged by horsepower, and be responsible for receiving, delivering, and loading of all freight to the Graniteville Depot. Graniteville Company would also be responsible for all freight once it left the main railroad line.³² In a later letter, Gadsden added the final condition that the entire arrangement would be terminated if traffic to Graniteville did not increase as Gregg promised.³³ The branch road would come within a mile of Graniteville at what would become Warrentonville, with freight traveling by wagon the remaining distance to the factory. Gregg wrote to Gadsden again in January 1849 requesting more railroad service, but it was not until 1868 that the tracks would come directly into Graniteville.³⁴

By July, many of the construction problems were resolved, and the machinery in place and ready to be tested. Blackwood wrote to Springs on July 13, 1848: "I had the honor of buying two bales yesterday for the Graniteville Factory to be a sort of breakfast for the machinery tomorrow morning." On September 6, 1848, an advertisement in the *Edgefield Advertiser* requested "300 additional white operatives" for the Graniteville Manufacturing Company.³⁵ A *DeBow's Commercial Review* article published in October/November 1848 mentioned that the shafting had just been completed and machinery was being put into place.³⁶ By the fall, production was underway at Graniteville, although it would be several months before the factory operated at full capacity. In June 1849 Blackwood wrote to Springs that "they seem to be working very finely at Graniteville and everything does well. They spin about seven bales a day and Mr. Taylor [Treasurer] says the goods is [sic] much sought after in Philadelphia - and that he has some pretty large orders ahead."³⁷

³²Col. James Gadsden to William Gregg, 14 June 1847, William Gregg Papers, Miscellaneous Manuscript Collection (hereafter MMC), Library of Congress, Washington, DC.

³³Col. James Gadsden to William Gregg, 24 June 1847, William Gregg Papers, MMC, Library of Congress, Washington, DC.

³⁴David D. Wallace, unpublished typescript, "A 100 Years of William Gregg and Graniteville," (1944), Gregg-Graniteville Collection, USC Aiken, 78. That year the Columbia and Hamburg Railroad linked Columbia and Graniteville, with service beginning on November 30, 1868.

³⁵*Edgefield Advertiser*, 6 September 1848, clipping in Gregg-Graniteville Collection, USC Aiken, Acc. # 314a.

³⁶Thomas Maxwell, "Graniteville and Vancluse [sic.]," *DeBow's Commercial Review* 6:4&5 (October/November 1848): 371.

³⁷John J. Blackwood to John Springs III, 4 June 1849, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

Graniteville Mill followed the New England model, with modifications for its Southern location and the inexperience of local craftsmen. The dimensions of the mill were 350 by 50 feet, making the mill long and narrow like a New England mill, but at only two and half stories, lower than most Northern mills. Generally it is thought that William Gregg recognized that lower walls would require a less substantial foundation, be easier to build, and be less subject to stress from the vibration of machinery.³⁸ The mill was constructed of local blue granite, with two front towers. The load-bearing granite walls were topped with heavy timber trusses held together by mortise and tenon joinery. The towers contained alternating landings and enclosed staircases (See photograph HAER No. SC-27-12). The thick granite walls were tapered inward at the interior window openings to improve natural illumination, a traditional technique for stone masonry structures. Presently the mill has only a partial basement, but wheelpit areas are accessible on either end of the mill.

Graniteville Within the Context of the Antebellum Textile Industry

In spite of Gregg's unique accomplishment at Graniteville, there were a small handful of Southern mills that served as examples in addition to the New England ones. The most obvious influence on Gregg would have been nearby Vacluse Mill, which Gregg partially owned and managed during 1837. Vacluse was a water-powered mill constructed of granite located just a few miles from the Graniteville site. Four stories plus attic tall and 40 by 80 feet, the original Vacluse Mill building was built in 1832 and used a New England-inspired form similar to Graniteville's subsequent design.³⁹ Although moderately successful under Gregg's supervision, Vacluse embodied what Gregg saw as two fatal flaws of the Southern textile industry. Vacluse Mill was small; in 1849 it employed 94 operatives to work 2,280 spindles and 43 looms compared to 300 workers operating 9,245 spindles and 300 looms at Graniteville.⁴⁰ Its product of coarse osnaburg fabric and bundle yarn was only consumed by the local market, while Graniteville immediately established ties to Charleston wholesalers.

Saluda Mill in Columbia was another South Carolina mill that Gregg considered "a warning beacon." Saluda was organized in 1832 with only \$50,000 of capital, a major shortfall that eventually bankrupted the original investors. As described by Gregg, "to erect such a factory and carry on such a work in Massachusetts, a capital of \$400,000 would have been raised. . . The

³⁸Wallace, "A 100 Years," 47; Lander, 58.

³⁹The original mill burned in 1867 and a brick mill was constructed by Lockwood Greene Engineers in 1877. Graniteville Company President H. H. Hickman acquired the property from James Gregg in 1876 (William Gregg had become sole owner in 1856 and gave the property to his son). For more information on Vacluse, see Tom Downey, "Vacluse Mill Village Historic District," Aiken County, South Carolina. National Register of Historic Places Registration Form, 1996. U.S. Department of the Interior, National Park Service, Washington, D.C..

⁴⁰Robinson, 456-457.

establishment dragged out a sickly existence of two or three years, and was finally sold under the hammer, not paying its debts."⁴¹ Gregg blamed the Southern perception that the original investors in a manufacturing enterprise always ended up selling at a loss on the common lack of sufficient start-up capital.⁴² Saluda Mill survived its tumultuous early years, but remained a cautionary tale. Cotton mills were still rather rare in South Carolina at this time. *DeBow's Commercial Review* listed eleven in February 1848, including Vaucluse, Saluda, and Graniteville.⁴³

In the President's report presented in April 1849, the total cost of Graniteville was estimated to be \$32.44 per spindle (9,245 spindle mill capitalized at \$300,000), compared to \$35 to \$38 per spindle at Lowell, Massachusetts. An itemized list of costs as Graniteville was included as follows:

Real Estate	\$12,222.35
Canals and dams	9,505.46
Factory Buildings	60,144.57
Water wheel and flumes	6,949.12
Shafting and gearing	12,663.99
Machinery	121,754.03
Fire and steam apparatus	5,947.65
Starting up mill, and furniture	3,587.96
Saw mill, machine shop &c.,	9,079.86
Cord clothing	3,010.00
Dwelling houses	43,293.18
Streets and fences	1,998.80
Contingencies not yet carried to proper account	3,307.49
Margin left for future expenditures	6,539.67
<hr/>	
Total	\$300,000.00

The single largest expenditure was for machinery, reflecting the importance of purchasing quality equipment when establishing an up-to-date mill. Other expenses for infrastructure such as streets and fences, canals and dams, and dwelling houses also represent important components of establishing Graniteville as a long-term investment. The larger than typical capitalization of \$300,000 allowed a much more complete and substantial Southern manufacturing enterprise than

⁴¹William Gregg, *Report of the President and Treasurer for 1854*, (Charleston: Walker & Evans, 1855), 12.

⁴²Gregg, *Report of the President and Treasurer for 1854*, 7.

⁴³"Cotton and Iron Manufactures in South Carolina," *DeBow's Commercial Review*, 5:2 (February 1848): 189-190.

was common in this period.⁴⁴

In addition to its large capitalization, Graniteville, although smaller than the New England mills Gregg observed, incorporated many of the most up-to-date features of textile mill design. The two staircase towers contained the vertical circulation for the mill and were separated from the main section of the building by heavy fire doors. This feature had become common in New England mills by the 1830s to protect against the spread of fire. The tower also provided space for vertical movement of materials, and left the entire interior of the mill open for machinery.⁴⁵ The picker house was a 44 ½ x 86 granite building at the north end of the mill, kept separate for similar fire safety reasons. Debris or matches in the cotton could easily start a fire when the bales were being broken open. A water-driven turbine powered the machinery; the water traveled through a headrace from the canal and emerged on the west side of the mill where the tailrace emptied into Horse Creek. Water also provided steam heat for the mill, a very innovative feature.

By the 1840s, the basic form of the nineteenth-century factory - a narrow, rectangular multi-story building - was well established. Deceptively simple, this arrangement actually provided relatively unbroken interior space for production, efficient use of building materials, and effective distribution of power from water-driven shafts and belting.⁴⁶ At Graniteville, textile production took place on both floors and in the large attic under the massive wooden roof beams. Gregg traveled to New England in the summer of 1847 to acquire machinery from several prominent manufacturers, including spindles from William Mason and Co. of Taunton, Massachusetts. The mill was planned to hold 300 looms, and 9,000 spindles making No. 14 yarns, sheetings and shirtings. *DeBow's Commercial Review* described the machinery as "all of the most perfect and beautiful kind, and is principally from Taunton, Massachusetts."⁴⁷

Reactions to the Construction of Graniteville

Published accounts of Graniteville during the years of its construction speak to the public interest in this unusual project. These accounts, through their emphasis on nature and the picturesque qualities of Graniteville, also reveal Southern ambivalence toward manufacturing. Like the founding years of Lowell, Massachusetts in the 1820s, discussion of Graniteville centered on the wholesomeness of both location and occupants to assuage fears about the corrupting influence of industry. The earliest published account of Graniteville appeared in the *Charleston Courier* on March 23-24, 1848. The author described the changes that had taken place to the

⁴⁴Robinson, 457.

⁴⁵William H. Pierson, Jr., *Technology and the Picturesque, The Corporate and the Early Gothic Styles: American Buildings and Their Architects Volume 2*, (New York: Oxford University Press, 1978), 46-47.

⁴⁶Pierson, 24-25.

⁴⁷Wallace, "A 100 Years," 38; Maxwell, 371.

"rude forest" that existed previously. He described the canal, sawmills, factory and turbine, but gave equal attention to landscape and community features. Gregg had the area between the canal and mill laid out with evergreens and ornamental trees to increase the naturalistic appeal of his cotton mill. The newspaper writer discussed this landscaping, as well as the topography of Graniteville, which was "beautifully laid out on the side of gently sloping hill." Graniteville's existence was described consistently as a positive addition to the natural landscape, and the surrounding settlements such as Aiken, a well-known winter resort, and farms in the Horse Creek Valley: "The road from Graniteville to their [William Gregg and Ker Boyce] farms is through an exceeding beautiful and romantic country. ... All along the valley farms and farm houses are to be seen, which will doubtless improve in appearance and profit as the demands of Graniteville call forth their production. ... There is no question that the building up of Graniteville will very much add to the attractions of the village of Aiken."⁴⁸

In the second installment of the article the next day, even the site of the factory was imbued with the blessings of nature: "The Factory building is situated...about fifty yards from the creek, on a perfectly flat piece of ground, peculiarly adapted for a site, so much so that it looks like Dame Nature designed it as such." Again the landscaping of the mill grounds was prominently discussed:

The yard is tastefully arranged and beautifully decorated with evergreens and various kinds of shrubbery, in the centre of the yard a fount of clear spring water is placed, with a column of water spouting forth some twenty feet high - this looks grand, and reflect much credit upon the Head of the concern. This garden, I fear, will outvie some of your (Messrs. Editors) splendid city gardens.

William Gregg's attention to landscaping and the prominent discussion of these features certainly shows sensitivity to anxieties about manufacturing within the predominantly agricultural Southern society.⁴⁹

DeBow's Commercial Review published a lengthy and enthusiastic description of Graniteville in its October-November 1848 issue. Again the beauty of Graniteville was an important theme, used to illustrate the wholesomeness of this manufacturing enterprise:

When Graniteville burst upon our view from the summit of the hill, its main building of white granite, 350 feet long, with two massive towers ornamented at the top, looking like some magnificent palace just rising out of the green vale below, with an extensive lawn in front, and clean trimmed gravel walks around,

⁴⁸"The Graniteville Manufacturing Co.," *Charleston Courier* 23 March 1848: 2.

⁴⁹"Graniteville, As It Was, and Is To Be," *Charleston Courier* 24 March 1848.

and fountains spouting their crystal waters in the air in fantastic shapes; the neat boarding-houses and cottages for single families, and the handsome little church, all constructed and ornamented in the ancient Gothic style, and each house having its own garden for vegetables and flowers; and the evergreen woods sloping from their garden doors gradually to the summit of the hill where we stood - the whole scene is as though the wand of the enchantress had called it into existence to challenge our admiration.⁵⁰

The holistic blend of factory and nature, business and village was continually emphasized in descriptions of what was considered an exceptional manufacturing enterprise. When the mill or machinery were mentioned it was to emphasize the modernity and progressiveness of Graniteville in comparison to other Southern mills.

Another lengthy, two-part article in the *Charleston Courier* a year and one half later again emphasized the pleasant landscape of the manufacturing village: "I was peculiarly struck with the taste displayed in the buildings, and the ornamental walks, the newly planted shade trees of elm, walnut and the beautiful water oak, the evergreen shrubbery and the great variety and abundance of the queen among all the flowers, the rose."⁵¹ After mentioning that the factory building and machinery would be of interest to "capitalists," the author continued to describe at length the landscaping of the factory grounds and village. William Gregg carefully cultivated this impression. In his 1849 President's Report, Gregg acknowledged the strategic purpose of Graniteville's design:

Many persons may suppose that unnecessary outlays have been made in ornamenting grounds, and the erection of a handsome style of buildings for the accommodation of persons employed in our service. A little reflection however we think will convince all, that this is to be an important element in our success. In the outset of our enterprise, the difficulty of overcoming the prejudices of the southern people against such employments, seemed to be one of the greatest barriers to our success, and this became a primary and serious object of our consideration.⁵²

⁵⁰Maxwell, 370-371.

⁵¹"Graniteville Factory- No. 1," *Charleston Courier* 7 September 1849.

⁵²William Gregg, *President's Report*, (1849). Gregg-Graniteville Collection, USC Aiken.

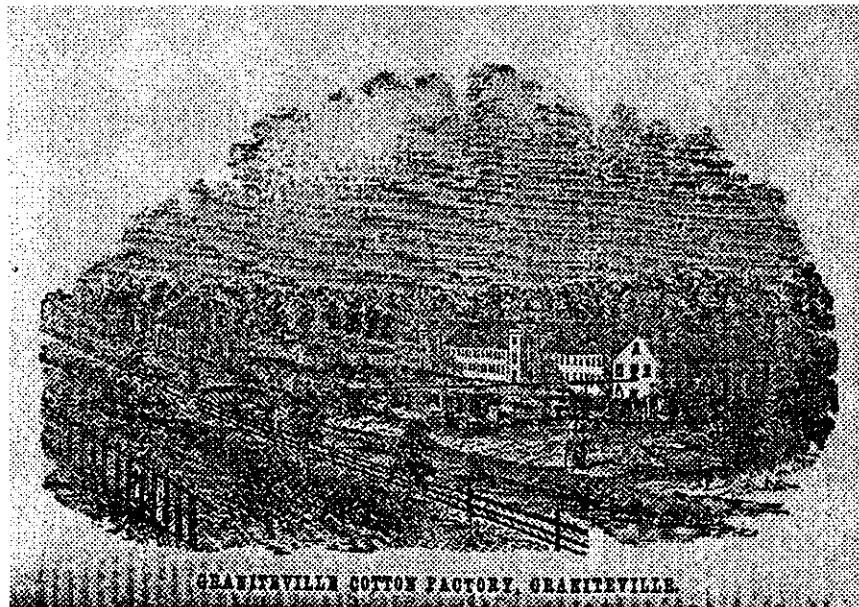


Figure 1 - *DeBow's Southern and Western Review*, (March 1851).

The earliest available image of the Graniteville Mill is an engraving published in *DeBow's Southern and Western Review* in March 1851 (Figure 1). It depicts the mill as seen from a low rise looking southwest. The mill and picker building are framed by trees and bathed in sunlight. The mill structure, with its two entrance towers topped by columned cupolas, sits to the left of the picker building. The picker building is shown as a two-story, front gable structure sited perpendicular to the main factory. An elevated track for moving cotton bales rises from the factory yard to a large center opening at the second floor of the picker building. A small office structure is in front of the southeast corner of the mill building. Two wooden warehouse structures are located along the canal. Stacks of lumber and the canal also appear prominently in this image. Although it is safe to assume that some artistic license was taken when creating this engraving, the surviving mill structure indicates that it is a relatively faithful rendering of the appearance of Graniteville Mill in its founding years.⁵³

An Ideal Mill Town

As implied by the above accounts, the village of Graniteville was as important as the factory that inspired its existence. Gregg, as shown in his *Essays on Domestic Economy*, was quite aware of the importance of establishing a stable supply of labor. Some other antebellum Southern mills, including Saluda Factory near Columbia, used slave labor, but Gregg was firmly in

⁵³"Gallery of Industry and Enterprise: William Gregg of South Carolina," *DeBow's Southern and Western Review* 10:3 (March 1851): 350.

support of using white labor at Graniteville.⁵⁴ His rhetoric about the appropriate use of poor white labor in manufacturing reflects what would become the status quo in the Southern textile industry for more than one hundred years. African-Americans, considered "naturally" suited for agriculture, were restricted to certain manual labor or janitorial textile mill jobs well into the mid-twentieth century. To attract a supply of white laborers to Graniteville, Gregg acted on his previous rhetoric, building a picturesque village of Gothic Revival mill houses. The paternalistic management style and built environment were closely linked at Graniteville, particularly during the first twenty years when it was under William Gregg's direct control.

Initially, Gregg envisioned a boarding house system of worker housing similar to Lowell, Massachusetts. He built boarding houses across the road from the canal and within short walking distance of the factory. In March 1848, the *Charleston Courier* described the completed worker structures: "One hotel of 18 or 20 rooms; three houses of 16 rooms each; and eight other of eight rooms each. These buildings are of wood, neatly built, after handsome Architectural plans. Fronting upon the canal, and having handsome porticos or piazzas, they afford residences which would not detract from the beauty of any village in the Union."⁵⁵ Several of the large boarding house structures still survive on Canal Street and Taylor Street. They are two and one-half story, five-bay, central hall structures, with a side gable roof and a central triangular dormer. A hipped roofed porch extends from the front elevation and a service ell at the rear projects from the main rectangular form of the house. Like most southern vernacular mill housing, these dwellings were built on brick piers which have subsequently been filled in. (See HAER No. SC-28-1 for contemporary photograph of example located at 77 Taylor Street.)

When Graniteville Manufacturing Company first advertised for workers in September 1848, the intention to rely primarily on boarding houses was clear. The company called for 300 workers, primarily girls, and 30 matrons to oversee the boarding houses. Similar to the pattern of young girls seeking temporary employment at Lowell, the Graniteville advertisement reassured potential workers about the moral atmosphere:

As the company intend to establish and maintain a most exemlary [sic.] state of morals in the place, any young lady whose circumstances require that she should labor for a support, may engage as a weaver, spinner, &c., at lucrative wages, and with the most perfect assurance that they will not lose caste by such employment, and a temporary residence at Graniteville.

The family cottages were also mentioned, but any family who did not supply four workers for the mill was required to take in boarders.

⁵⁴See "Saluda Factory, SC - Negro Labor," *DeBow's Commercial Review* 9:4 (October 1850): 432-433.

⁵⁵"The Graniteville Manufacturing Co.," *Charleston Courier* 23 March 1848: 2.

Gregg quickly realized that the boarding house model, successful at Lowell because of the availability of young women from farm families, was less effective with poor Southern families where the entire family needed employment. He switched his emphasis to more small single family houses to lure entire families from the subsistence farming to mill work. Each house plot included space for gardening and keeping livestock. As described in *DeBow's Commercial Review* in January 1850, "the houses were soon filled with respectable tenants, who paid a fair interest on this part of the capital, and while the sons and daughters worked in the mill, the father would engage in cultivating his land, hauling wood &c, and the mother would attend to the housekeeping department."⁵⁶ Small-scale farming would become common in Southern mill villages as a means of easing the transition from farm to factory and supplementing the meager family income. Gregg described this arrangement in an advantageous manner in *Hunt's Merchants' Magazine* for December 1849: "Our female help is all taken from resident families under the protection and care of parents. This is a great moral restraint, and gives us an advantage over those who have to rely on the boarding-house system for help."⁵⁷

A number of the original single family houses constructed by Gregg survive and their Gothic Revival forms and detailing illustrate the thoroughness of his paternalistic vision for Graniteville (See photograph HAER No. SC-29-1). Gothic Revival was the current vogue in domestic and ecclesiastical architecture, reflecting a shift from Greek Revival to more decorative, eclectic forms intended to harmonize with the natural landscape. This new decorative mode was popularized by the writings of landscape architect Andrew Jackson Downing, starting with his treatise *Cottage Residences, Rural Architecture, and Landscape Gardening*, first published in 1842. The house designs presented by Downing ranged from ornate medieval-inspired villas to simple wooden cottages with Gothic detailing. Gregg's cottages are simplified versions of the more modest Gothic dwellings illustrated in Downing. These wooden structures were raised on brick piers and featured the characteristically Gothic vertical board and batten siding and a steeply-pitched front gable. Decorative scalloped barge boards are still extant in the gables of the remaining houses. These houses were located behind the boarding houses, slightly uphill from the canal and mill.⁵⁸

Gothic Revival architecture also represents the cultural interest in proper architecture for inspiring morality in the 1840s. In the preface to *The Architecture of Country Houses*, published in 1850, Downing outlined three reasons why Americans should have good houses:

⁵⁶"Manufactures in South Carolina," *DeBow's Commercial Review of the South and West* 8:1 (January 1850): 24-29.

⁵⁷William Gregg, "The Graniteville (S.C.) Cotton Manufactory," *Hunt's Merchant's Magazine* 21:6 (December 1849): 672.

⁵⁸In March 1848, the correspondent from the *Charleston Courier* observed that five cottages of forty that were planned were built "of the gothic order of architecture - each containing five rooms."

The first, is because a good house (and by this I mean a fitting, tasteful, and significant dwelling) is a powerful means of civilization. ...The second reason is, because the *individual home* [emphasis original] has a great social value for a people. ...The third reason is, because there is a moral influence in a country home-when among an educated, truthful, and refined people, it is an echo of their character-which is more powerful than any mere oral teachings of virtue and morality.⁵⁹

A "fitting, tasteful, and significant dwelling" was in this case was synonymous with the Gothic Revival houses rendered by New York architect Alexander Jackson Davis and presented in Downing's books. Gregg's decision to provide single family, Gothic Revival cottages in addition to boarding houses reflects Downing's ideas about the social value of an individual home, and the moral influence of good design. The close relationship between Downing's cottages and nature would have also been appealing to Gregg as he sought to mitigate the presence of a relatively large industrial site in a rural landscape. Gregg carefully balanced the practical and idealistic, telling *DeBow's Commercial Review* that the Gothic Revival cottages "only cost the company \$400 each, and that the ornamented work was only a small portion of that cost; while it was intended to give to the inhabitants a taste for the beautiful, and to encourage among the operatives a pleasant rivalry in making their home agreeable."⁶⁰

Gregg also corresponded during this time period with the New York architect Richard Upjohn, another famous practitioner of Gothic Revival architecture. Upjohn's Trinity Church in New York City was completed in 1846. In July of that same year, Gregg wrote a letter introducing himself to Upjohn and asking for informal advice in "decid[ing] on some cheap stile [sic.] of Architecture, that we may go on afterwards and build up a uniform village conforming to some sort of order." Gregg spoke of plans to build boarding houses, a school, churches, and single-family cottages and came to Upjohn because he was "peculiarly happy in making something pretty, out of very little." He mentioned specific dimensions and a \$200-300 price for the houses, but it is unclear whether Upjohn ever actually provided house plans for Graniteville. Nevertheless, Gregg's letters to Upjohn indicate his awareness of the major design trend toward Gothic Revival during the mid-1840s.⁶¹

⁵⁹Andrew Jackson Downing, *The Architecture of Country Houses*, (New York: Da Capo Press, 1968, reprint of 1850 edition), v-vi.

⁶⁰Maxwell, 371.

⁶¹William Gregg to Richard Upjohn, 14 July 1846, Richard Upjohn Collection, Manuscript and Archives Section, New York Public Library (hereafter NYPL). Many thanks to Lisa Goff for providing the citations for Gregg's correspondence with Upjohn. Unfortunately Upjohn's replies are not part of the collection. Other letters from Gregg to Upjohn were written on July 26, 1847; August 29th, 1847; October 30, 1847; November 2, 1847; and June 17, 1848.

Other letters do reveal that Upjohn designed a small Gothic Revival church for Graniteville in 1847. This structure was to cost \$1,500 not including the steeple, and Upjohn was paid \$75 for his plans. The vernacular design process at Graniteville was even apparent in this church designed by a prominent architect. In a November 2, 1847 letter Gregg advised Upjohn that the carpenters on site suggested changes to the roof structure of the church in order to save money on plastering. Perhaps the fashionable Gothic Revival design was a bit too radical for the local churchgoers because Gregg confided to Upjohn that neither the Baptists nor the Methodists approved of his plan as "they are both characterised for plainness and simplicity in their houses for worship." Eventually built as St. James' Baptist Church, the structure was destroyed by a fire in 1886.⁶²

While the worker cottages at Graniteville reflect contemporary theories about design and morality, the attention to design and worker amenities was rather unusual. This degree of paternalism and interest in the influence of village design would not reemerge in the Southern textile industry until the early twentieth century. In addition to housing, Graniteville offered churches, a hotel and a school, all subject to the tight control of the company. The September 1849 account of Graniteville in the *Charleston Courier* emphasized the charitable activities at Graniteville in contrast to Northern or European companies:

The effect produced by neatness, order and ornament around and within factory establishments has not been sufficiently appreciated by the stockholders in some parts of our country, but more especially in Europe. In Graniteville, on the contrary, an effort is made to improve the moral condition of the operatives by surrounding them with objects of taste and ornament, by giving them access to good schools, and by providing for them libraries, Sunday schools, churches and pastors.⁶³

The policy regarding churches at Graniteville supported Gregg's social and design vision for the community. Church-going operatives would hopefully be more reliable and reflect positively on the company. Church architecture was subject to review by the company to make sure any structures would harmonize with the rest of the village. As described by the *Charleston Courier* in March 1848: "Determined to impart an entirely religious and moral tone to the community of Graniteville, the Company have granted to the Methodists and Baptists each, a site for a Church; and these sects, with the ardor and zeal which so eminently characterizes them, have already proceeded to erect places of Worship. The only restriction which the Company has imposed on them is that the plan of their Churches shall be constructed after designs from

⁶²William Gregg to Richard Upjohn, 29 August 1847 and 2 November 1847, Richard Upjohn Collection, Manuscript and Archives Section, NYPL.

⁶³"Graniteville Factory-No. 1," *Charleston Courier* 7 September 1849.

approved Architects.”⁶⁴ Both original Graniteville churches, St. John’s Methodist and St. James’ Baptist (now rebuilt) were Gothic Revival structures; St. John’s was designed by Charleston architect E. B. White, closely following Upjohn’s design for St. James’. Gothic Revival would have been fashionable for religious architecture at this time, as well as complementing the single-family workers cottages in town.

The company-owned hotel at Graniteville was another site for positive public relations and strict social control. The hotel was operated by Mr. Brett, who also ran one of the sawmills.⁶⁵ One of the first structures built at Graniteville, the hotel was to house those traveling to do business with the Graniteville Company. Per Gregg’s orders, the hotel did not serve any liquor, keeping with the general rule against alcoholic beverages anywhere in town. In 1850 Gregg complained about the new hotelkeeper, Mr. Moses, who wanted to serve wine and brandy, remarking in a letter to Graniteville superintendent James Montgomery, “we don’t want a set of loafing wine drinkers about the place.”⁶⁶ Graniteville sought workers who were teetotaling as well as pious, and those that came to town needed to conform in order to have access to mill jobs and housing.

Education was another important component of Gregg’s vision of a well-ordered industrial village. A wooden Gothic Revival school house was built at the north end of Canal Street. School attendance was mandatory for all children between six and twelve, with the teachers and books supplied by the company. Rules for operatives were used as a means to maintain the idyllic character of the mill village - during William Gregg’s tenure strict enforcement was the norm. Writing in *Hunt’s Merchants’ Magazine* in December 1849, Gregg described the prohibition of alcohol and mandatory school attendance, and wrote, “The restraints above named are willingly acquiesced in by the people and we have one of the most moral, quiet, orderly, and busy places to be found any where.”⁶⁷ By 1851, the population of Graniteville had grown to 881; 85 of those were black laborers who lived on the outskirts of town and the rest white workers and their families housed in company dwellings.⁶⁸

Naturally Graniteville’s populace was not quite as orderly as Gregg liked to claim. In the article “Industrial Workers in the Mid-Nineteenth Century South: Family and Labor in the

⁶⁴“The Graniteville Manufacturing Co.,” 2.

⁶⁵“Graniteville, As It Was, and Is To Be”

⁶⁶William Gregg to James Montgomery, 31 December 1820, William Gregg Papers, MMC, Library of Congress, Washington, D.C..

⁶⁷Gregg, “The Graniteville (S.C.) Cotton Manufactory,” 672.

⁶⁸Wallace, “A 100 Years,” 48.

Graniteville (SC) Textile Mill, 1845-1880," David C. Ward provides a more objective analysis of Graniteville's early workers. He suggests that Graniteville's workers were unhappy with the strict paternalistic control, but it was not until the upheaval of the Civil War and William Gregg's death in 1867 that they successfully were able to push for wage increases and a change in the compulsory education policy. In the 1840s and 1850s, the majority of Graniteville's workers were young, white and living in an extended family setting. Ward's analysis of the census data also confirms the existence of mixed occupational structure rather than an immediate and complete reliance on industrial wage labor. Often older family members, particularly the father, worked outside the mill in small-scale farming or artisanal trades. As the nineteenth-century progressed, the mix continued, but with an ever-increasing dependence on factory labor.⁶⁹

Graniteville During the 1850s

After persisting through starting difficulties, and two years of depression in 1850 and 1851, Graniteville began to pay dividends to its investors, distributing \$27,000 in 1853 and \$36,000 in 1859. William Gregg quickly began urging the stockholders to reinvest and expand operations at Graniteville. In his 1854 report to the stockholders, Gregg first emphasized the excellent condition of the existing facilities: "Our machinery has been kept in excellent order, as our handsome goods will show, - that everything connected with the water-power and factory is in a better condition than when we first commenced business. We have gradually removed wooden dams and waste-ways, substituting brick and stone laid in cement."⁷⁰ Thirty-six more looms had been added in 1854, but Gregg was intent on convincing the stockholders that bolder expansion was necessary. The power system was altered in 1854 as well, with a second turbine installed in a new wheel pit.⁷¹ Gregg now wanted to extend operations to fully utilize the horsepower of the new system. Gregg wrote: "Why then should we hesitate in expending a hundred thousand more, when it will almost double our income. Our Picker-House is large enough for 15,000 spindles-the only new factory building required will be a one-story Weave-House large enough to hold all the looms."⁷² The stockholders balked at Gregg's proposal to extend the capital by \$240,000 to finance expansion. Many were still quite nervous about the chances for long-term success, and preferred to maintain the modest dividends that Graniteville had begun to yield.⁷³

⁶⁹David C. Ward, "Industrial Workers in the Mid-Nineteenth Century South: Family and Labor in the Graniteville (SC) Textile Mill, 1845-1880," *Labor History* 28:3 (1987): 328-348.

⁷⁰Gregg, *President's and Treasurer's Report for 1854*, 4.

⁷¹Mitchell, "A 100 Years," 45.

⁷²Gregg, *President's and Treasurer's Report for 1854*, 4.

⁷³John J. Blackwood to John Springs III, 23 March 1854, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

Gregg continued to experiment and improve Graniteville throughout the 1850s. In 1857 he tried to set up a gas works for provide fuel for gas lighting the mill. Letters from Gregg to the firm of Morris Tasker & Co. reveal initial problems getting the gas works to operate properly. On September 29, Gregg complained of only being able to make enough gas to light the mill for twenty minutes.⁷⁴ Eventually, the technical difficulties were resolved and Graniteville had gas lighting, a very innovative feature even for New England mills. In February 1858, Graniteville superintendent James Montgomery wrote to Whitin and Son on Gregg's behalf asking for "best method for applying fanners to carry off the dust from your old pickers and clear the picking room from the light dust which floats about to the great injury of the health of the operatives."⁷⁵ Again, Graniteville Company was unusual in the South, and among many Northern mills as well, in its innovative approaches and attention to new technology.

Also during 1858, Graniteville was expanded by the addition of a 24x50 foot one-story brick cloth room on the southern end of the mill structure. Structures in the village listed in the 1858 President's and Treasurer's Report to the Stockholders included: "a commodious hotel; five stores, one 110x25 feet; ten two-story upright houses [boarding houses]; and about fourteen double cottages, with nine rooms, and seventy-five small cottages; a neat two-story school house." The motive power of Graniteville Mill had also been increased by this time to three turbines, one 170 horsepower and two 120 horsepower. One of the turbines was kept as a reserve for running the saw mill and in case one of the others malfunctioned. It is not clear from present examination of the site where a third turbine would be located.⁷⁶

Supplying the Confederacy, 1861-1865

Graniteville continued to operate successfully through the 1850s, but the Civil War years brought new challenges. As one of the largest cotton mills in the largely agricultural South, Graniteville would assume an important role supplying cloth once trade with the North was discontinued. William Gregg signed the secession resolution on December 20, 1860 as a representative from the Edgefield District. In his biography of Gregg, Broadus Mitchell attributed Gregg's support of succession to his long association with Charleston and the prevailing sentiments of his slave-holding associates rather than a strong political belief. Gregg had been a leading proponent of white over slave labor and he benefitted greatly from his business contacts in

⁷⁴William Gregg to Morris Tasker & Co., 9 September 1857, Graniteville Manufacturing Company Letterbooks, microfilm reel R1122b September 1857-September 1858, South Caroliniana Library, University of South Carolina, Columbia (hereafter SCL, USC, Columbia).

⁷⁵James Montgomery to Morris Tasker & Co., 2 February 1858, Graniteville Manufacturing Company Letterbooks, microfilm reel R1122b September 1857-September 1858, SCL, USC, Columbia, SC.

⁷⁶William Gregg, *President's and Treasurer's Report to the Stockholders of the Graniteville Manufacturing Company*, (1858), 19-20. Gregg-Graniteville Collection, USC Aiken, SC.

the North.⁷⁷ However, Gregg also held the common Southern view of slaves as property, and he objected to government interference with personal property rights above all. In Wallace's unpublished history of Graniteville he assessed Gregg's attitude toward slavery in a similar manner:

His [Gregg's] repeated reference to abolitionism as "an abstraction" shows how completely absent from his thinking was any idea of the moral aspects of slavery; he merely accepted it and current Southern defense of it. He falls neither among the Southern group who acknowledged its evil but saw no way to free themselves from it, nor among its philosophical apologists. ... As a strictly practical man he resented the abolitionist proposal to take from people their lawful property, and as abolitionism became more calmant he more and more weakened in his traditional Unionism.⁷⁸

At the stockholders meeting of June 1861, plans were made to expand Graniteville in preparation for war. The capital was increased to \$550,000 and arrangements were made to expand the factory building and purchase new machinery. Estimates for new machinery were received from an English firm, with only some of the new machinery arriving before the federal blockade.⁷⁹ In his president's report for 1861, Gregg described some the difficulties caused by the war, such as shortages of labor and supplies. The mill was not running at full capacity, due to problems such as seven out of nine dresser tenders leaving to enlist. Gregg reported that "the place is generally in good repair, but not as neat as usual for want of labor. The operatives are as contented as the times will admit, many of them having husbands, brothers and sons in the army and are continually subjected to tempting offers from other mills." Gregg also described the ingenuity and improvisation required to keep the mill operating in spite of wartime shortages: "Much difficulty has been experienced in procuring supplies. I went to Louisville late in August and bribed through the enemy's lines a lot of card clothing etc. which has been invaluable to us. After testing all kinds of oil, we have settled on the Peanut as the best lubricator to be had anywhere in quantity in the Confederacy."⁸⁰

In spite of the difficulties, high prices earned considerable profits for Graniteville and some of the extra profits were used to expand the mill. In the President's Report for 1861, Gregg stated that "our new weave house will be completed this summer [1862], when we will be

⁷⁷Mitchell, *William Gregg*, 202-203.

⁷⁸*Ibid.*, 114.

⁷⁹*Ibid.*, 205-206.

⁸⁰William Gregg, *President's and Treasurer's Report to the Stockholders of the Graniteville Manufacturing Company*, (1861). Gregg-Graniteville Collection, USC Aiken, SC.

prepared for a considerable extension of our works. This will afford room for an investment of our surplus earnings." Gregg hoped to use the wartime surplus to expand and upgrade the machinery at Graniteville dramatically, a move he was prevented from carrying out by more cautious stockholders during the 1850s. The first step was construction of the weave house, a one-story brick structure attached to the southern end of the original 1840s stone structure. The weave house is still extant although altered (See photograph HAER No. SC-27-1). Gregg was prevented from fully carrying out his expansion plans during the war because of the difficulty of acquiring machinery.⁸¹

During 1862, Gregg moved to use half of the available stock to fill standing orders, and to auction off the rest of the cloth directly. Prices began to rise quickly and controversy ensued; as Gregg wrote in the *Daily South Carolinian* on June 4, 1864:

By the time 4-4 sheetings, drills and osnaburgs had advanced to twelve and thirteen cents - a price quite reasonable, and as English competition will allow us even with a tariff - we had the whole community down on us, berating us through the newspapers, at public meetings and even in the pulpit, as a set of heartless extortioners, worse than Yankee vandals. And before our goods had reached twenty-five cents, the public mind had become so exasperated that many thought our mills were in danger of violent destruction from the mob.⁸²

Graniteville was caught between the frustration of the public and the ineffectiveness of the Confederate government. Initially large government contracts came with the promise of a labor detail, but in September 1862, Confederate Quartermaster J. B. Ferguson wrote to Gregg denying his request for a detail of soldiers. All men were needed on the front, and the Confederacy was rescinding its policy of providing labor to defense contractors.⁸³

The Confederate government was gradually becoming Graniteville's largest customer, but by the last two years of the war it no longer paid for cloth, instead seizing it as payment for taxes. Nevertheless, huge profits were accumulated and divided among the stockholders before the end of the war because of fear of seizure by the Federal government. For example, the 1864 dividend

⁸¹Instead of the multi-story design of the original mill, the weave house is presently a large open room with an exposed truss roof structure. Photographic evidence and the 1923 Sanborn map indicate a clerestory monitor on this structure that is no longer present. Like the original mill, the windows were bricked in during the mid-twentieth century.

⁸²quoted in Mitchell, *William Gregg*, 209.

⁸³General J. B. Ferguson to William Gregg, 19 September 1862, William Gregg Papers, MMC, Library of Congress, Washington, DC.

was \$1,159,497, and the 1865 dividend was \$2,391,201.⁸⁴ Construction began on a new machine shop in 1865 (See photographs for HAER No. SC-27-B). This granite structure is still located behind the original mill, closer to Horse Creek on the west. It is a rectangular, two-story structure parallel to the original mill and now linked to it by enclosed bridges at the second floor.

In summer 1865 Gregg left for New England to purchase machinery to fully equip the weave room and replace the badly worn machinery in the rest of the mill. He arranged to buy carding machinery from Whitin Machine in August, and have it shipped to Savannah or Charleston depending on railroad repairs. By that fall he discovered that none of the prominent New England manufacturers could deliver the machinery in less than a year, so he got a release from his contract with Whitin and purchased machinery in England. Letters written by Gregg from England express his frustration with trying to make the arrangements for obtaining new machinery. In October he repeatedly wrote to his brother-in-law James Jones, temporarily in charge of Graniteville, asking for measurements of the new "water wheel," but apparently was not receiving any letters in return. He also planned to purchase machinery in Manchester, but not until he had received the necessary money in England.⁸⁵ Later he found it necessary "to use the New England shops also, not only for his new turbine from Ames and Co. of Chicopee, Massachusetts, but for machinery from Whitin and from Mason."⁸⁶

Beyond the efforts to upgrade Graniteville's machinery immediately after the war, the 1867 President's Report gives a detailed account of other improvements. Upon his return from Europe at the end of 1865, Gregg found "the new buildings in an unfinished state, all the old buildings to be refloored and reroofed, a new wheel to put in, a job of five months, shafting to rearrange, old machinery to take out, and repack, and new machinery to put in, with a scanty supply of mechanical labor, the refitting of the railroads in the South having absorbed much of the skillful mechanical industry of our country."⁸⁷ Gregg also complains about the condition of the canal banks and dams, crucial aspects of Graniteville's manufacturing that required laborious repairs to fully utilize the available water power.

Gregg described another project critical to motive power at Graniteville - installation of a new "water wheel." In May 1866 he hired "an experienced and skillful hydraulic mill-wright" and

⁸⁴McC Campbell, 2; Graniteville Company, *Report of the President for the Year 1945*.

⁸⁵William Gregg to General James Jones, 28 August 1865, William Gregg Papers, MMC, Library of Congress, Washington, DC; Wallace, "A 100 Years," 177; William Gregg to General James Jones, 7 October 1865, William Gregg Papers, MMC, Library of Congress, Washington, DC.

⁸⁶Wallace, "A 100 Years," 178.

⁸⁷William Gregg, *Reports of the President & Treasurer of the Graniteville Manufacturing Co.*, (Augusta, GA: Constitutionalist Book and Job Printing Office, 18 April 1867), 8.

"an experienced mill-wright skilled in putting up gearing and shafting." After five months of work, these men successfully increased the potential water power at Graniteville. However, Gregg points out the unreliability of water power when he suggests, "it may be deemed expedient at some future day to supply ourselves with an engine; for, when in full operation, the loss of a day will be equivalent to a thousand dollars."⁸⁸ Increased and improved water power would be needed for the expanded operations at Graniteville. D.D. Wallace, in his unpublished company history of Graniteville, describes the changed status of the machinery after the war: "Early in 1867 the expansion of the factory had brought its spindles up to 27,000 and its looms up to 600, an enormous increase over the 9,120 throstle spindles and 334 looms of 1858, the latest previous date for which we have official figures. Even if Gregg had not done so, the much larger proportion of spindles to looms than formerly would have told us that the mill was now producing fine goods."⁸⁹

The condition of the village, both physical and social, also demanded Gregg's reform efforts during immediate post-war years. He complained that a number of stills were in operation near Graniteville and "the firing of pistols and guns and drunken rows were common occurrences in our streets; fences were being torn down, gates unhinged, and in one instance a house burned, in short, such a state of affairs as was entirely incompatible with successfully prosecuting our works." As he did in Graniteville's earliest days, Gregg continued to strongly urge the careful selection of Graniteville's residents. The post-war upheaval made vigilance even more imperative: "If bad people get into our community, and vicious habits begin to prevail, the better class of people who are the most valuable to us, will gradually leave the place."⁹⁰

The recollections Gregg wrote for the 1867 President's Report turned out to be fortunately timed because that same year Graniteville would lose its founder and most ardent promoter. In early September, one of the dams broke, and Gregg rushed back from Columbia to assist in the repair. He spent two days waist deep in the water, and soon after took ill with a "stomach ailment." Although previously healthy, Gregg was in his sixties, and never recovered from the illness. He died on September 13, 1867, signaling the end of an era at Graniteville.⁹¹

Graniteville and the Rise of the New South, 1870-1900

As Graniteville expanded and retooled in the post-war period, it also positioned itself to remain competitive during the late-nineteenth-century boom in Southern cotton mill construction. This boom greatly changed the competitive context of Southern textile production. Rather than

⁸⁸Gregg, *Reports of the President & Treasurer*, (1867), 9-10.

⁸⁹Wallace, "A 100 Years," 178-179.

⁹⁰Gregg, *Reports of the President & Treasurer*, (1867), 9.

⁹¹Mitchell, William Gregg, 254-255.

being unusual, Graniteville became one of many increasingly large cotton mills operating in the South. Locally, the Augusta, Georgia textile industry expanded dramatically during the late nineteenth century. Augusta, using water power from the Augusta Canal, had been an important textile manufacturing center in the South since the construction of Augusta Manufacturing Company in 1847. After expansion of the canal in the 1870s, a number of major new mills were built in quick succession. The three largest were Enterprise Manufacturing Company (1877-1878), Sibley Manufacturing Company (1880-1882), and John P. King Manufacturing (1882-84), with a combined total of over 80,000 spindles.⁹² In the Horse Creek Valley between Augusta and Graniteville, several new mills were built, such as Langley Manufacturing Co. in Langley (1868), Aiken Manufacturing Company in Bath (1895), and Warren Manufacturing Company in Warrentonville (1897).⁹³

Graniteville also expanded by improving its existing facilities. Graniteville's second president H. H. Hickman, was appointed in 1868 after previously serving as company treasurer. Hickman oversaw a number of changes and improvements to the mill during his thirty year tenure, as indicated by the lists of major repairs in the annual president's reports. For example, in 1871 the repairs list included a mix of items related to the machinery, mill, and village structures: "Repairs account embraces as its principal debits 50 new looms, brick walls and new tin roof to small card room, new cloth room, hydraulic press, six new cottages, new steam boilers, mortice gears for large water wheel, card clothing, and two new slasher cylinders."⁹⁴ It is not clear from present examination of the site where the "new cloth room" referred to was located. It is also not clear whether the six new cottages were built to conform to the original Gothic Revival ones, or they were the beginning of a section of more conventional mill dwellings built to the west and south of the mill.

In 1872, Hickman grew more bold in expressing a vision of expansion for Graniteville. A new water wheel, one hundred new looms, eight new cards, six new drawing frames and thirteen new cottages were added that year, but Hickman suggested additional, more drastic, changes. He wrote:

The great success that has attended the manufacture of Cotton in the South for the last two or three years, has induced me to recommend the enlargement of your

⁹²U.S. Department of the Interior, Historic American Engineering Record (HAER), No. GA-5, "Augusta Canal;" No. GA-13, "Enterprise Manufacturing Co.;" No. GA-19 Sibley Manufacturing Co.;" and No. GA-15, "John P. King Manufacturing Co.," 1977. Prints & Photographs Division, Library of Congress, Washington, DC.

⁹³Textile Mill Survey - Horse Creek Valley Survey, Dr. Michael C. Scardaville, Project Coordinator, South Carolina Department of Archives and History, Columbia, SC, 1985-86.

⁹⁴H. H. Hickman, *Reports of the President & Treasurer of the Graniteville Manufacturing Company*, (1871). Gregg-Graniteville Collection, USC Aiken, SC.

Mill to at least double its present capacity; and that a portion of your surplus be each year appropriated to this object, until such enlargement is completed. It will be necessary should you decide to adopt my recommendation, to employ steam for the motive power, as your water power is already fully employed. ... I am, however, confident...in three or four years build a new Mill of 20,000 spindles and 600 looms.⁹⁵

The addition of a new mill of that size would have been the largest project undertaken by the Graniteville Manufacturing Company since the original period of construction in the 1840s. Graniteville's financial health was good; R. G. Dun Co. credit reports during the 1870s consistently praised the company with comments such as "making a good deal of money: and "making money all the time."⁹⁶ Regardless the financial panic of 1873 postponed all plans for expansion. The panic, combined with drought and a yellow fever outbreak at the end of the decade, temporarily dampened the business climate of the Southern textile industry. Throughout the 1870s Graniteville continued to make small scale improvements such as additional worker houses, improved machinery, and a new gas works.⁹⁷

By the 1880s, the general climate of the Southern textile industry improved and throughout the Piedmont South a cotton mill building boom started to get underway.⁹⁸ At Graniteville, a drought was causing production problems and lost profits. In his 1882 report Hickman estimated that between March 1878 and February 1882 the Graniteville Manufacturing Company had lost over \$14,000 from low water causing shut-downs or slowing production. Even though production workers were not paid during this time, Hickman worried about the affect of shut downs on the reliability of the labor force, stating that "idleness is demoralizing, disorganizing in its influence upon some of them as well as upon others not similarly employed, and is calculated to make them discontented, and to incline the best and most industrious of them

⁹⁵H. H. Hickman, *Reports of the President & Treasurer of the Graniteville Manufacturing Company*, (1872), Gregg-Graniteville Collection, USC Aiken, SC.

⁹⁶R. G. Dun & Co., *Credit Ledgers*, January 1873 and February 1875, Baker Library, Graduate School of Business Administration, Harvard University.

⁹⁷H. H. Hickman, *Reports of the President & Treasurer of the Graniteville Manufacturing Company*, (1879). Gregg-Graniteville Collection, USC Aiken, SC; Hickman, *Reports*, 1875; Hickman, *Reports*, 1876.

⁹⁸The late-nineteenth-century boom in the Southern textile industry has been well documented by historians. For example, see David L. Carlton, *Mill and Town in South Carolina, 1880-1920*. Baton Rouge: Louisiana State University Press, 1982; James T. Cobb, *Industrialization and Southern Society, 1877-1984*. Lexington: University Press of Kentucky, 1984; or Melvin Thomas Copeland, *The Cotton Manufacturing Industry of the United States*. New York: Augustus M. Kelly, 1966 (1917). For a primary account of this trend, see "The South's Cotton Mills," *Manufacturers' Record* 12 (4 February 1888): 1160.

to seek more constant employment elsewhere.”⁹⁹ Hickman went on to describe his proposed improvements to the power system, improvements that had already been begun with the approval of the Board of Directors:

To attach to the Mill a steam engine of 300 horse-power to supplement your water-power in times of protracted drought; to build substantial and secure head-gates at the mouth of the canal as safeguards against sudden freshets; to deepen the canal so that more water may be drawn out of the ponds when it shall be needed; and to substitute iron tubes for the wooden ones now in use, which are very much decayed, are unsafe, and waste a great quantity of water in its flow through them from the canal to the water wheels.¹⁰⁰

Hickman justified the expense to the stockholders by saying, “the cost has been heavy, but generations following us will not have to do the work over.”¹⁰¹

The combination of steam and water power was a common strategy for manufacturers during the late nineteenth century; they could continue to take advantage of inexpensive water power with a back-up steam engine eliminating the need to shut down and lose money during times of low water.¹⁰² Hickman also added a steam engine to the rebuilt Vacluse Mill, now under the ownership of the Graniteville Company. The 1832 mill building had burned in 1867, and Hickman acquired the property in 1876. The new brick mill building was designed and built by Lockwood, Greene & Co. Engineers in 1877, one of the first Southern projects for this important Boston firm.¹⁰³

In spite of periodically adding new machinery, by 1888 Hickman worried about competition from more modern mills being built throughout the region.¹⁰⁴ In his President’s

⁹⁹H. H. Hickman, *President’s Report*, (18 April 1882). Gregg-Graniteville Archives, USC Aiken, Acc.# 68.

¹⁰⁰*Ibid.*

¹⁰¹H. H. Hickman, *President’s Report*, (1883). Gregg-Graniteville Archives, USC, Aiken.

¹⁰²Louis C. Hunter, *Waterpower in the Century of the Steam Engine: A History of Industrial Power in the United States, 1780-1930*, (Charlottesville: University Press of Virginia (Eleutherian Mills-Hagley Foundation), 1979), 516-528.

¹⁰³For information about Lockwood Greene, see Samuel E. Lincoln, *Lockwood Greene: History of an Engineering Business, 1832-1958*. Brattleboro, Vermont: Stephen Greene Press, 1960.

¹⁰⁴H. H. Hickman, *President’s Report*, (1886). Gregg-Graniteville Collection, USC, Aiken; Hickman, *President’s Report*, (1888). Gregg-Graniteville Collection, USC, Aiken.

Report for 1888, Hickman wrote:

The Graniteville Mill is one of the oldest mills in the South. Some of the machinery has been in use forty years; it has outlived its day and generation and must go. New modern buildings are springing up all over the South, and are being filled with machinery covering all the late improvements, and unless we do something in that direction we will be at a great disadvantage with our competitors.

That year Hickman built a new warehouse and added an automatic sprinkler system to the mill, a relatively innovative feature for this period. The first research on the performance of automatic sprinkler systems was conducted by Charles Woodbury for the New England Factory Mutuals in 1883 to 1887.¹⁰⁵ Hickman described hiring Lockwood, Greene & Co. Engineers of Boston to create a plan for completely overhauling the Graniteville Mill. Lockwood Greene was becoming one of the most prominent mill engineering firms in the country and Hickman had recently worked with them on the design for the new Vacluse Mill. Unfortunately, if Lockwood Greene did prepare a modernization plan for Graniteville, it no longer survives.¹⁰⁶

Similar to his proposal for major improvements in 1872, doubts surfaced immediately about the feasibility of Hickman's plans, which had an estimated cost of \$40,000 to \$50,000, plus another \$100,000 for machinery. The stockholders referred the matter to the Board of Directors who asked Hickman and Superintendent Rennie to study possible solutions. Hickman and Rennie decided that the results of the improvements would not pay for themselves, and requested that the Board of Directors authorize the amount to be spent on the building to be spent on machinery instead. The new machinery was quickly ordered and installed during 1889. Hickman praised Rennie for completing the upgrade "without the loss of production, as the old machinery had to be removed and new floors put down to receive the new."¹⁰⁷ Electric lighting was another important improvement added to the mill in 1891.¹⁰⁸

Although in 1893 Hickman reported that Graniteville was rapidly becoming a "first class

¹⁰⁵Betsy W. Bahr, "New England Mill Engineering: Rationalization and Reform in Textile Mill Design, 1790-1920" (Ph.D. Dissertation, University of Delaware, 1987), 153.

¹⁰⁶A major collection of drawings from the Lockwood Greene office in Boston is now housed at the National Museum of American History, Smithsonian Institution, Washington, D.C. A search there, and at the company's Spartanburg, SC office did not yield any surviving Graniteville drawings.

¹⁰⁷H.H. Hickman, *Graniteville Manufacturing Company President's Report*, (1889). Gregg-Graniteville Collection, USC, Aiken.

¹⁰⁸Wallace, "A 100 Years," 222.

new mill," by 1894 the national economic depression had an impact on the mill. It was the worst year since 1873 and Hickman told the stockholders that he would "use my best endeavors to keep the mills in motion without reducing the pay of the men and women who toil for us daily, doing all in their power to promote our interest; to my mind it would be far more just to reduce dividends."¹⁰⁹ Graniteville again survived the economic downturn and continued its practice of gradual expansion and modernization through the rest of the 1890s. According to Wallace, "in 1899 the mill was completely filled by the addition of 340 Draper looms and mule spinning was ordered abandoned for ring spinning in Graniteville."¹¹⁰ Switching from mule spinning to ring spinning was indicative of modernization at Graniteville; new mills in the late nineteenth century almost exclusively employed higher producing ring spindles rather than mule spinning technology.¹¹¹ A consistent pattern of spending money on new machinery while making do with old architecture probably contributed to the remarkable survival of the original Graniteville Mill. It was not until the late 1930s that any major structural renovations were done to the 1840s mill.

One undated photograph that appears to be from the late nineteenth century provides a glimpse of the changes to Graniteville Mill enumerated by Hickman's *President's Reports*.¹¹² The image was made from a rise looking southwest at the mill; the position is actually quite similar to the engraving that appeared in *DeBow's Review* in 1851. At the far right of the photograph, a portion of the original picker house is visible, along with several men pushing a bale of cotton up the elevated railway to the second story. Opening and picking was the first step in cotton textile production and examining the exterior of the mill from the photograph also roughly indicates the flow of cotton through the production process. A one-story building with a flat roof connected the picker house and the mill. Perhaps it contained additional picking or opening machinery. A smoke stack is visible behind this section of the mill complex, which would have been either for the steam engine or the gas works. The only obvious alternation to the exterior of the 1840s mill is a series of cylindrical ventilators along the ridge line of the roof. To the left of the mill is another addition, a narrow, two-story shed roofed structure sited perpendicular to the mill. Perhaps this is the cloth room mentioned in the 1871 *President's Report*. Just visible beyond the "cloth room" and also connected to the south end of the mill is the weave room added during the 1860s. The weave room is a one-story, brick structure with a monitor roof, presumably to provide additional natural light for the loom operators. Apparently the carding and spinning and other preparatory processes took place in the original mill, and then weaving was done in this addition.

¹⁰⁹H. H. Hickman, *Graniteville Manufacturing Company President's Report*, (1894). Gregg-Graniteville Collection, USC, Aiken.

¹¹⁰Wallace, "A 100 Years," 222.

¹¹¹See Copeland, *The Cotton Manufacturing Industry of the United States*.

¹¹²Gregg-Graniteville Collection, USC Aiken, Acc. #245.

Slightly in front of this section of the mill is a small side-gable, double-pen house with a center chimney, perhaps the Graniteville Manufacturing Company's on-site offices. Other noteworthy features visible in this photograph are the orderly pathways, lawns, hedges, evergreen trees and fountain in front of the mill. Several workers with horses and wagons are visible on the paths, and near the front of the mill are at least two light posts. The lighting would have been gas lighting before 1891, and electric light after. At the end of the nineteenth century, the common practice of progressively adding to and changing industrial sites was beginning to transform Graniteville from an idyllic country factory into a constantly evolving industrial complex. This process would accelerate and expand dramatically during the first half of the twentieth-century.

Graniteville During the Early 20th Century

Hamilton H. Hickman resigned as president in 1899 and was succeeded by his son, Tracy I. Hickman. It was Tracy Hickman who finally oversaw the major addition to Graniteville Manufacturing Company that his father had first suggested in 1872. In 1900 the company hired Lockwood, Greene & Co. Engineers to design a 20,000-spindle mill on a site just south of the original mill. The new mill, named Hickman Mill after H. H. Hickman, utilized the latest style of mill construction and technology, just as the original Graniteville Mill had. The form of the mill demonstrated common textile mill architecture at the turn of the century. The three-story brick mill was larger and wider than earlier mills due to late-nineteenth-century advances in artificial lighting and steam power. Previously dependance on natural light and the limitation of water-powered shafts and belts had shaped typical mill forms. Hickman Mill was powered by steam and therefore not dependant on the waters of Horse Creek for its power. It could be located away from the canal and creek on open land. The new affordability of steam power, and the need for expansion beyond geographically limited water power sites fueled the shift to new steam powered textile mills throughout the South by the 1890s.¹¹³

Another common feature of mills in the late nineteenth and early twentieth century was the omittance of any attic space - the Hickman Mill was built with a very low-pitched gable roof directly over the production area on the third floor. Similar slow-burning mill construction without attics was promoted by the Factory Mutual Fire Insurance Companies, which offered lower premiums to textile companies that conformed.¹¹⁴ Slow-burning construction required avoiding all concealed spaces, particularly inside floors or walls, with a heavy timber interior

¹¹³See Greene, "The Influence of Motive Power on the Design of Cotton Mills," 203-206.

¹¹⁴See Bahr, "New England Mill Engineering;" and Sara Wermiel, "The Development of Fireproof Construction in Great Britain and the United States in the Nineteenth Century," *Construction History* 9 (1993): 3-26. Useful primary sources include Edward Atkinson, "Slow-Burning Construction," *Century Magazine* (February 1889): 566-579; and Charles J. H. Woodbury (Inspector for Factory Mutual Fire Insurance Cos.), *Fire Protection of Mills and Construction of Mill Floors* (New York, 1895 (3rd ed.)).

structure and masonry, typically brick, walls.¹¹⁵ Instead of tall, narrow structures with attic spaces under gable roofs, typified by the early nineteenth century New England mill, the typical form of new mills was lower and wider. Usually these new mills utilized brick exteriors with large windows, and heavy timber, slow-burning framing. The change in mill form was dramatic and the standard slow-burning construction became synonymous with mill construction.

An account of Graniteville at the turn-of-the-century appears in the *Twentieth Century Book of Augusta*, published in 1901. Augusta, Georgia was the closest major city, and also the site of Graniteville Manufacturing Company's corporate offices. Of Graniteville, the author writes: "Main building here is a substantial 2 and ½ story structure, built of brick and stone, 650 feet long, varying in width from 60 to 100 feet. There is also a machine shop 75x50 in dimensions, and other minor conveniences." The description of the main building "of brick and stone" refers to the 1847-48 granite mill and 1860s brick weave room addition. The description goes on to list other vital statistics: 800-horse power of water power, 426 employees, 25,000 spindles and 650 looms, and annual production of 12,000,000 yards of cotton cloth. The description also includes the new Hickman Mill: "An addition to the Graniteville Mill is now under construction. It is 294x130, a fine building and will contain 15,600 spindles and 560 looms. All machinery of the most modern construction." Although remote compared to Augusta, by the turn of the century Graniteville was an important anchor for the regional Horse Creek Valley textile industry. At this time the regional textile economy was intertwined with the business community of Augusta, a New South city, in contrast to the Charleston ties of Graniteville's early days.¹¹⁶

The construction of Hickman Mill also prompted a major expansion of the mill village with about 100 new houses. Instead of the Gothic Revival cottages built during William Gregg's tenure, the new houses at Graniteville were more typical Southern mill village dwellings. Very plain, one and one-half story wood frame cottages were built on the hill to the west of the mill complex (See photograph HAER No. SC-30-1). This area was dubbed "New Town" and was arranged into a two by four block area. Two alleys running north/south divided the blocks created by Eargle Street, Rennie Street, and New Turkey Row. The houses in "New Town" are nearly identical, with mirror-image upright-and-wing houses lined up across the street from each other. Two other areas of housing beyond the original Gothic Revival structures to the east of the mill were probably created in a more piece-meal manner throughout the late nineteenth and early twentieth centuries. South of the mill complex were a few dozen houses of a variety of forms, mainly arrayed north/south along Mill and Hickman Streets. Just west of the mill at the bottom of the "New Town" hill were a scattering of houses along three curving streets - Franklin, Mocking

¹¹⁵Frank Eugene Kidder, *The Architect's and Builder's Pocketbook*, (New York: John Wiley & Sons, 1893), 456.

¹¹⁶Henry P. Moore, *Twentieth Century Book of Augusta*, (Atlanta, GA: Foote and Davies, 1901): 51-52.

Bird, and First Streets.¹¹⁷

Along with the expanding mills and villages, employee welfare programs were expanding for many Southern textile villages in the early twentieth century, including Graniteville. The Southern textile industry was coming under fire for its child labor practices. Progressive Southern companies began to invest in employee welfare programs such as clinics, kindergartens, baseball teams, community centers and pools in an effort to reduce labor turnover and appease outside critics. Hickman Hall was constructed by Tracy Hickman in 1907 to provide a variety of services to Graniteville employees. August Kohn, a journalist from Columbia, SC, described Hickman Hall shortly after its opening in 1907. He wrote: "Without exaggeration I regard this as the handsomest club house building of any in the State of South Carolina. ...Instead of putting up a monument to Mr. Hamilton H. Hickman, who had been the successful president of the Graniteville Mill for a great many years, his son, Mr. T. I. Hickman, suggested that the memorial to be erected by the mill corporation take the shape of a serviceable club house, and the sum of \$25,000 has been expended in the building that is to be used exclusively for the pleasures of the operatives."¹¹⁸ The facility included a swimming pool, bowling alley, gymnasium, library and banquet hall. Hickman's justified the expense to the stockholders in his 1907 President's Report: "If you permit me to carry out the plans already outlined for this building, you will never regret it, and you will find it one of the best paying investments that, as stockholders you could put your money into. The mills to-day that are running successfully are the mills that have satisfied and contented help, and no help can be satisfied and contented that have no means of pleasure and recreation, and this I feel it is our duty to provide for our faithful and worthy people at Graniteville."¹¹⁹

Also in 1907 August Kohn wrote an interesting profile of Graniteville and its residents in his study *The Cotton Mills of South Carolina*. Kohn worked for the Columbia Bureau of the *Charleston News and Courier* and his work on the textile industry was published in serial form and then released as a single volume. He visited a variety of "typical" mills, including Graniteville. Kohn's "unbiased" account was a largely positive description of the South Carolina cotton textile industry, meant to answer the criticism of child labor reformers and other Progressive-era activists from the North. The benefits of education are particularly emphasized in Kohn's account, with Graniteville and other South Carolina mills described as "conspicuous in their leadership in providing good schools." Kohn wrote that "at Graniteville, for instance, where the school building of forty years ago is still in use, with additions and improvements, the attendance last

¹¹⁷William C. Lott, "Graniteville: A Vision Become Reality," unpublished typescript, (27 June 1939), 6; McCampbell, 33.

¹¹⁸Kohn, *The Cotton Mills of South Carolina*, 130.

¹¹⁹Tracy I. Hickman, *Graniteville Manufacturing Company President's Report*, (1907). Gregg-Graniteville Collection, USC Aiken.

year was 260, and the average attendance was 95 per cent."¹²⁰

Kohn provided numerous useful facts about everyday life for the workers at Graniteville. Black employees of the Graniteville Company, which included Graniteville, Hickman and Vaucluse Mills numbered 85, with 33 of those on the "yard gang." Other common jobs for black textile mill workers included work in the picker house, boiler room, or machine shop. Cost for housing in Graniteville in 1907 was 94 cents to \$1.36 every two weeks for a four room house, and \$1.50 every two weeks for a five room house. Kohn described a four-room house at Graniteville as having a parlor (15x15), 2 bedrooms (15x15), a kitchen (12x12), a closet, and front and back porches. One worker at Graniteville whom Kohn interviewed, "Dock M.," responded positively about his \$1 a day wages. He earned \$12 every two weeks working in the cloth room and his wife did not work in the mill. His wages met his expenses for rent, wood, meat, groceries, lodge dues, burial insurance, milk, and washing, with some leftover. Kohn also talked about the labor shortage in South Carolina, partially due to workers frequently taking time off. "The Graniteville Cotton Mill, which is particularly fortunate in keeping all of its machinery going, has a population of 2,000, and out this number 851 are on the pay roll. Mr. Rennie, who is one of the best superintendents in the State, figures that it is necessary to carry from 20 to 25 per cent of spare help."¹²¹

In spite of Kohn's glowing description, the contemporary missionary activities of St. Paul's Episcopal Church indicate that poverty and a lack of social services were still serious problems in the Graniteville Mill community. In 1909 Episcopal Deaconess Anna Sands began a missionary program for Graniteville workers. Starting in 1910, Sands built a multi-use parish house to provide a variety of services. Night school, cooking and sewing classes, boys and girls clubs, mother's meetings, and a clinic were all offered to educate and uplift Graniteville workers. While the Graniteville Company was not being particularly singled out for poor labor practices, St. Paul's Mission acknowledged the inherent difficulties of mill life: "The life of the average mill hand is at present very hard; it is a life of endless toil, with little visible hope or brightness in it, very, very little to stimulate or to encourage higher standards of living and thinking."¹²²

Although still hampered by the hardships of mill work, Graniteville did benefit from the paternalistic traditions of William Gregg and the shift to employee welfare programs during the Progressive Era. The Graniteville Company appeared in a series of special "Health and Happiness" numbers published by the trade journal *Southern Textile Bulletin* in 1917, 1918, and

¹²⁰Kohn, *Cotton Mills*, 125.

¹²¹*Ibid.*, 52, 62.

¹²²Rev. J. Hanckel Taylor and Anna E. Sands. *St. Paul's Mission Horse Creek Valley*. (Graniteville, SC: St. Paul's Episcopal Church, 1914), 10. Rev. Doug Puckett, current pastor of St. Paul's, provided a copy of the original booklet.

1919. Like Kohn, *Southern Textile Bulletin* was reacting to reformers' criticisms of the textile industry by publishing profiles featuring the social welfare efforts of dozens of southern mill companies, and statistics countering the charges of poor health, child labor, and illiteracy in Southern mill villages. The beautiful scenery, housing, church activities, schools, Hickman Hall's gymnasium and clubs were all highlighted as tools for creating a contented workforce. The author wrote that, "Every modern and improved facility of welfare work is here in evidence and is running with the precision of a watch movement. The management is seldom troubled with roving families for just the reason that when they hit this village their desire to wander ceases."¹²³ The *Southern Textile Bulletin* features both celebrated paternalistic companies like Graniteville as good examples, and imply that not all Southern mill villages were quite so admirable.

Perhaps because of the expanded social welfare and village improvement projects, Graniteville Company experienced a cash shortfall in 1916 and was forced to go into receivership. Tracy Hickman resigned as President and was replaced by Jacob Phinzy in December 1916. Increased business due to World War 1 helped improve Graniteville's economic status. The receivership was lifted in April 1917 and Graniteville entered a new period of acquisition and expansion. In 1920 Graniteville Company gained a controlling interest in Sibley Mill and Enterprise Mill, both in Augusta, Georgia. In 1921, Warren Mill in nearby Warrentonville was also absorbed by the Graniteville Manufacturing Company.¹²⁴

In Graniteville proper, the mill expanded with the construction of the Gregg Dyeing plant in 1924. This brick structure, with a saw-tooth monitor roof, housed finishing, and research and development activities. Gregg Dyeing was located to the east of the original Graniteville Mill in the previously landscaped mill yard. The mill complex was beginning to look more like a typical industrial site with a jumble of buildings and additions, in contrast to the carefully cultivated naturalistic setting of the nineteenth century. In 1921, the company also built a modern brick school building across the canal on the site of the old hotel. The wooden Gothic Revival Graniteville Academy remained, but no longer served as a school building. A set of ten stone-faced worker's houses was built in 1928 south of the original housing in an area that became known as "Rocktown."¹²⁵

Graniteville During the 1930s and 1940s

In spite of the acquisition of other mills, Graniteville Manufacturing Company's growth was subdued by the 1920s downturn in the textile market and the national depression in 1929. Sporadic wage cuts and labor troubles were experienced during the 1930s. The next President of

¹²³"Graniteville Manufacturing Company," *Southern Textile Bulletin* 14:16 (20 December 1917): 163; Similar text appears in the 1918 and 1919 issues.

¹²⁴Lott, 6-7.

¹²⁵McC Campbell, 39.

Graniteville was Lanier Branson. Branson is credited with seeing Graniteville through tumultuous economic times. In his history of Graniteville, Board of Directors Chairman Leavelle McCampbell describes the situation in dire terms: "His [Branson's] advent marked the beginning of a textile collapse such as the industry had never faced. ... Hundreds of mills have failed. Seven million spindles have been scrapped."¹²⁶

J. E. Surrine and Company appraised the holdings of the Graniteville Manufacturing Company in 1934. Parts of this appraisal were reproduced in McCampbell's history of Graniteville (the original has not been located). The description of Graniteville Mill provides information about the power source and other technology in use in 1934:

One 350 HP and one 450 HP horizontal shaft water-wheels, belted to line shafts, furnish a portion of the power and the balance is purchased. The present wheels were installed in 1917 and the motors at various times from 1901 to 1927. The machinery is mostly housed in a long, narrow multiple-story building of standard slow-burning mill construction. The attic of part of one building is being used as a spinning room. There are automatic fire protection systems in the buildings and they are adequately heated. The electric lighting system is quite old and inadequate according to modern standards. The air is partly conditioned by a system of old-style sectional humidifiers but mostly by modern atomizers. The cotton warehouses and miscellaneous buildings are of frame construction and are protected by systems of dry sprinklers.

This appraisal shows that Graniteville was still using a belt-driven, water power system in the mid-1930s. A variety of other technological updates had been added over the years including electric lighting, humidifiers, and sprinklers, but Graniteville Mill was by this time very old fashioned in form. Machinery included 91 cards, 26,016 spindles, and 700 looms. The value of the mill buildings was listed as \$84,833 and the machinery \$394,105. In contrast, the more modern Hickman Mill building was valued at \$175,009.¹²⁷

The Surrine appraisal also provides insights into the status of the village in the mid-1930s. The total value of the village was appraised as \$469,391, which included 178 acres of land, 325 houses, store buildings, school, community house, ball park, grand stand, ice plant, garages, and infrastructure like street lights and fences.¹²⁸ Segregation in textile mill villages is also matter-of-factly present in Surrine's assessment, with listings for "negro" churches and residential areas.

¹²⁶Ibid., 7.

¹²⁷Ibid., 25, 30.

¹²⁸Ibid., 31.

The first major structural changes to the original Graniteville Mill were done in 1938. In order to electrify the mill and make room for modern machinery, the mill was expanded laterally on the west side. The first and second stories were widened 38 feet and the original granite was reconstructed on the exterior (See photograph HAER No. SC-27-14). The mill was now even closer to the 1865 machine shop on the first floor and joined via extensions on the second floor. The Daniel Construction Company of Greenville was the contractor. Sources do not provide evidence about the engineer for this expansion, but Joseph Serrine was on the Graniteville Board of Directors and his company had done the recent appraisal. The new expanded mill facilitated modern methods of handling materials because, "at that time automatic conveying equipment to handle card laps and roving was placed in the Granite Mill. This was the first equipment of its type in the industry and has been in successful operation since that time."¹²⁹ Examination of the mill also suggests that many of the original wooden columns were removed at this time, and replaced by smaller steel ones, particularly on the second floor. Metal poles were added for extra support in the attic trusses as well.¹³⁰

The original Graniteville Mill was now almost 100 years old, but remained remarkably intact in spite of the 1938 expansion. The main elevation on the east side of the mill was largely unchanged, although the view from the canal and village to the east was now obscured by the increasingly dense industrial complex that had grown up around it. Sensitive to the age of its facilities, the Graniteville Company offered this assessment of "modern" textile mills in the *Graniteville Bulletin*:

To some of us the word modern brings to mind gleaming enamel or glass, stainless steel or chromium finish, high speeds, stream-lining, air-conditioning, everything controlled and operated by push buttons, every detail right up to the minute. If we use those standards it is quite obvious that no mill can be modern except one that is brand new, and even it will remain modern only until the style changes or until

¹²⁹Caption on photo #27, Daniel Construction Co., Greenville, Photo album 1938-1946, Gregg-Graniteville Collection, USC Aiken, SC.

¹³⁰Another more detailed explanation of the new machinery appears in the first edition of the *Graniteville Bulletin*: "One of the policies of the Graniteville Co. is to modernize its equipment. In keeping with this policy the Graniteville Card Room has obtained new opening and picking machinery, additional cards and remodeled drawing frames, also new long draft roving frames. This machinery is now driven by electric motors instead of the old belt drive. Before this new equipment could be installed the mill had to be extended from 50 to 78 feet. Since the room was built in a long rectangular shape, and the picker room being some distance from the cards, it was necessary to install a conveyor system to take care of this hauling. This conveyor is a continuous chain operating on an overhead track, pulled by a 5-hp motor. The chain is 2273 feet in length, carries cars located every 10 ft., and makes a complete circle every hour. These cars will carry two picker laps or three cans of sliver. There are 126 cards in this department and the conveyor travels in front and back of each card. This carrier system is very efficient and has exceeded expectations." Robert Arender, "Graniteville Division," *Graniteville Bulletin* 1:1 (25 June 1942): 5.

new and improved manufacturing methods are developed. Quite obviously Graniteville Company's mills, most of which were built a good many years ago, can never be completely "modern" according to those standards. However, regardless of their age as measured in years, we believe that mills may be fairly classed as modern if they afford safe and comfortable working conditions for their employees, and if they can produce high grade materials at costs low enough to meet competition. Graniteville intends to fulfill these requirements and work toward this objective is going on constantly. In the very nature of things, this is an endless job- one that is never finished- because improved methods and machines will continue to be developed and progressive mills will adopt them as soon as they have proved their worth. A glance at the activities now going on at all our mills is enough to convince anyone that Graniteville Company intends to keep its plants modern."¹³¹

Around this same time, the picker house/opening room area on the north end of the mill was rebuilt. Instead of two connected structures, aerial photographs from the 1940s show that the entire area was encased in a new 2-story, flat-roofed structure, sheathed in granite to blend with the original section of the mill (For a present day view, see photograph HAER No. SC-27-8).¹³²

Samuel Swint became President of Graniteville Company in 1939 and led the company from the growth of the war years until 1962. During World War II Graniteville Company mills were making "uniform drills and twills, tent duck, tarpaulins, gun covers, aeroplane cloth, bed ticking, flannels and other industrial fabrics for the armed forces."¹³³ The Graniteville Company included seven divisions at this time - Vaucluse, Granite, Hickman and Gregg Dyeing (in Graniteville), Warren, Sibley and Enterprise (in Augusta).¹³⁴ In 1945 the Granite Division, which consisted of the 1840s mill and additions, produced 18,245,613 yards of cloth with 143 cards, 24,900 spindles, and 690 looms.¹³⁵ Defense contracts brought wage increases and a period of relative prosperity for Graniteville's workers. The Graniteville Company also used some of the wartime profits for worker housing improvements. As described in the July-August 1943 edition of the *Graniteville Bulletin*, the company "recently completed a village program that consisted of

¹³¹"Modernization," *Graniteville Bulletin* 1:4 (Sept-Oct 1942): 2.

¹³²Gregg-Graniteville Collection, USC Aiken, SC.

¹³³Jack Griffis, "Safe Thoughts," *Graniteville Bulletin* 1:1 (25 June 1942): 10.

¹³⁴*Graniteville Bulletin* 1:1 (25 June 1942): 3.

¹³⁵Graniteville Company, *Report of the President for the Year 1945*, 10.

four years of overhauling every house in Vacluse, Warrenville and Graniteville villages."¹³⁶

Like many U.S. industries, textiles expanded dramatically during World War II and then sought to continue that prosperity in the post-war era. Another survey of Graniteville by Pierre Ghent and Associates (City Planning - Housing Consultants - Land Planning Specialists) in 1944 points to some of the future changes in Graniteville. This preliminary planning study addressed ways to improve the village and mill infrastructure of Graniteville in light of the crowding caused by wartime growth. It identified five basic problems or areas for improvement at Graniteville: main lines of traffic circulation, location of town center, plan of Graniteville industrial area, location of additional housing, and development of the Graniteville estate.¹³⁷

The report suggested moving the main thoroughfare east away from Canal Street, and making the area between the new street and Gregg Street a town common and new shopping area. Ghent and Associates also recommended that the area south of Hickman Mill be reserved for future company expansion. This land use would eventually require demolition or moving the mill housing already located there. The planners suggested that new housing be concentrated in the areas north and west of the mill complex. They also recommended the continuation of reforestation activities, and the creation of more parks and greenways for the community. Perhaps the most dramatic suggestion was that these changes be partially financed by selling the houses to the workers, a trend that would not become widespread in the Southern textile industry until the 1950s.

Although this plan was never systematically implemented, a number of changes that took place in Graniteville during the late 1940s and 1950s seem to be in sympathy with its basic ideas. In 1945 twenty-five cottages were moved from "Shakerag" area south of Hickman Mill to Hester St., east of the canal. Indoor bathrooms and brick foundation fills were added to the houses in 1947. However, the company housing was not sold off to the workers until 1969. A modern shopping center and parking lot was constructed between Canal St. and Gregg St. in the 1950s.

Conclusion

Increased international competition starting in the 1950s began to erode the Southern textile industry's market share. Graniteville Company did expand in 1960s and 1970s with modern, one-story, windowless structures for the Gregg and Swint Divisions, located west of the original mill complex. A transition to producing synthetic fabrics was important for Graniteville's continued success. The windows of the older mills were bricked in sometime in the 1960s, a

¹³⁶Frances Jackson, "Service Departments - Maintenance," *Graniteville Bulletin* 2:7 (July-August 1943): 5.

¹³⁷"Planning for Graniteville: A Preliminary Report to the Graniteville Company, Graniteville, SC," Washington, DC: Pierre Ghent and Associates, (June 1944).

common technique for conserving energy that has radically altered the appearance of many historic textile mills. The original mill, canal, and a portion of the village was placed on the National Register of Historic Places in 1976 and made a National Historic Landmark in 1977. However, photographs from the 1940s reveal that the village has been more altered than those nomination materials imply, particularly due to the moving and demolition of houses and public buildings such as the Masonic Hall, train station, and movie theater. Hickman Hall remains intact and used by the mill as offices. The most drastic change in Graniteville's recent history took place in 1983 when the Graniteville Company was purchased by Avondale Mills, Inc. Avondale continues textile production at Graniteville, making mainly denims. The original Graniteville Mill is no longer used for production, but remains relatively intact and used for storage while production continues at the Hickman and other mills on site. Although modernized and adapted for over 120 years, the original Graniteville Mill could no longer accommodate the needs of modern textile production.

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APPENDIX I: TEXTILE DIRECTORY DATABASE REPORT

Textile Directory Database - Methodology *Lisa Pfueller Davidson, HAER Historian*

The Textile Directory Database uses selected editions of three textile industry directories housed in the Library of Congress. These directories are *Davison's Textile Blue Book* (New York: Davison Publishing Co.), *Dockham's American Trade Reports and Directory of the Textile Manufacture and Dry Goods Trade* (Boston: C.A. Dockham and Co.), and *Textile Manufacturers' Directory of the United States or American Textile Directory* (New York: American Directory Co., Inc.). The names of these directories vary somewhat over the years.

The directory years range from 1866 to 1940, with the most thorough coverage from approximately 1890-1920. The directory editions included in the database are roughly every five years, but availability created gaps for some directories and allowed additional years for others. *Davison's Textile Blue Book* is the most consistent and well-represented directory in the database with editions for every two to four years from 1888 to 1940 included. *Dockham's American Trade Reports* provides the earliest coverage starting in 1866 and going up to 1925, but with large gaps in availability. *Textile Manufacturers' Directory* is available for the years from 1874 to 1911 only, but consistently every two to five years.

The database compiles a standard set of information from all of the included directories: mill name, directory date, directory name, company, date, capital, product, number of spindles - mule, ring, twist and type not available, number of looms - broad, narrow, and type not available, power source, number of employees, and miscellaneous notes. Empty fields for any of these categories indicate that information was not available for that year. The information in the textile directory database is only as reliable as the original directories, and it is important to know that inconsistencies do appear in the original listings. All information has been transcribed as presented in the original directories. Comparing directories or editions is useful for determining the relative accuracy of specific listings.

Each textile directory report includes all of the entries available in the database for a given county, town or mill. This phase of the Textile Industry Database includes entries for LaGrange and Hogansville, Georgia; Valley, Selma and Huntsville, Alabama; and Graniteville, South Carolina. The database will be expanded along with the HAER Southern Textile Industry Survey.

Notes on Specific Fields:

Mill (name): Historic name changes sometimes make a specific mill difficult to track. Where possible, name changes are noted in the Notes field, or location and company name can be used to identify a mill by its historic name.

Directory Date and Directory: These two fields identify the year and type of directory that entry was from.

Davisons = *Davison's Textile Blue Book*

Dockhams = *Dockham's American Trade Reports and Directory of the Textile Manufacture and Dry Goods Trade*

Textile = *Textile Manufacturers' Directory of the United States or American Textile Directory* (name varies).

Company: While these directory reports are sorted primarily by mill name, the company name is included for all entries to show consistency or changes in ownership.

Date: The date in this field either refers to the year of incorporation for the mill or the year operations began, as listed in the directory. Inconsistencies in this field generally result from this difference, or indicate that the mill was reincorporated.

Capital: Sometimes the capital amount given for a certain mill actually refers to the capital for a larger company operating multiple mills. This fact is mentioned in the Notes field where possible.

Product: The types of fabrics and yarns made at the mill during that directory year are listed.

Spindles (Mule, Ring, Twist, or Type Not Available): The numbers reported in the directories usually appear to be estimates rounded to the nearest 100 or 1000.

Looms (Broad, Narrow, or Type Not Available): The numbers reported in the directories usually appear to be estimates rounded to the nearest 100. When the specific size of loom was mentioned, that information appears in the Notes field.

Power: It is often not clear from the directories when a mention of electric power means just for lighting or for operating machinery as well.

Employs: The numbers reported in the directories usually appear to be estimates rounded to the nearest 10.

Notes: This field contains miscellaneous information where appropriate, sometimes including amounts additional types of machinery such as cards and pickers.

HAER, SC, 2-GRANV, 1-

GRANITEVILLE MILL

HAER No. SC-27

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Directory Date	Directory	Capital	Product	Spindles - Mule	Spindles - Ring	Spindles - Twist	Spindle Type N/A	Looms-Narrow	Looms-Type N/A	Power	Employs	Notes
1866	Dockhams											manager H.H. Hickman
1870-71	Dockhams		sheetings, shirtings and drills				23,356					
1874	Textile		No. 14, 3/4, 4/4, 7/8 and drills				22,000		570			HH Hickman, pres, Geo. Kelly mgr.
1874-75	Dockhams	\$600,000.00	sheetings, shirtings and drills				23,356					
1880	Textile	\$600,000.00	no. 14, 3/4, 4/4, 7/8 drills, sheetings, shirtings				24,264		584			
1887	Textile	\$600,000.00	drills, sheetings, shirtings				33,260		926	water and steam		9 boilers, 3 ww (includes Vacluse)
1888	Davisons		sheeting, shirting and drills				33,000		926	water and steam		3 ww, 9 boilers (and Vacluse Mills)
1890	Davisons		sheeting, shirting and drills				33,000		926	water and steam		9 boilers, 3 ww (and Vacluse Mills), HH Hickman pres, TH Rennie, supt.
1893-94	Dockhams	\$600,000.00	brown sheetings, shirtings and drills		34,600				961	water and steam		HH Hickman, pres. and TH Rennie, supt.
1894-95	Davisons	\$600,000.00	sheeting, shirting, and drills				33,000		986	water and steam		3ww, 9 boilers, Hickman pres, Rennie, supt.
1895	Dockhams	\$600,000.00	brown sheetings, shirtings, and drills	10,752	21,460				985	water and steam		office in Augusta, GA
1895-96	Davisons	\$600,000.00	sheeting, shirting and drills				33,000		1,015	water and steam		3 ww, 9 boilers
1896-97	Davisons	\$600,000.00	sheeting, shirting, and drills				33,000		1,015	water and steam		9 boilers and 3 ww

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1896-97	Textile	\$600,000.00	drills, sheetings and shirtings				35,000	1,106	water and steam		3 water wheels, 9 boilers, 3 engines, Hickman pres and Rennie supt. (and Valcuse Mills)
1899-1900	Davisons	\$600,000.00	sheeting, shirting, and drills				34,990	1,106	water and steam	775	
1900-01	Davisons	\$600,000.00	sheeting, shirting and drills				34,990	1,106	water and steam	775	10 boilers, 3 ww, to add 15,000 spindles
1901	Dockhams	\$600,000.00	brown sheetings, shirting and drills	10,752	24,148			1,106	water and steam		increasing plant
1901-02	Textile	\$600,000.00	drills, sheetings and shirtings	10,752	24,148			1,106	water and steam	800	3 w.w., 10 boilers, have added 15,000 sp. and 500 looms
1904-05	Davisons	\$600,000.00	sheeting, shirting and drills	10,752	43,444			1,698	water and steam	985	13 boilers, 3 ww, 252 cards
1905	Dockhams	\$600,000.00	brown sheetings, shirting and drills	10,752	43,500			1,698	water and steam		Hickman pres and Rennie supt
1905-06	Davisons	\$600,000.00	sheeting, shirtings, and drills	10,752	43,444			1,698	water and steam	985	3 ww, 13 boilers
1905-06	Textile	\$600,000.00	drills, sheetings and shirtings	10,752	43,444			1,698	water and steam	950	3 ww, 13 boilers, 1750 hp
1906-07	Davisons	\$600,000.00	sheeting, shirting and drills	10,752	43,444			1,698	water and steam	985	252 cards, 13 boilers, 3 ww
1910-11	Davisons	\$600,000.00	sheeting, shirting and drills	10,752	45,922			1,698	water and steam	900	3 ww, 13 boilers, 180 cards
1910-11	Textile	\$600,000.00	sheetings, shirtings, drills and twills	10,752	45,956			1,698	water and steam		
1914	Dockhams	\$600,000.00	brown sheetings, shirting and drills		57,000			1,700	water, stm & elc	900	Hickman pres, WA Giles supt
1914-15	Davisons	\$813,000.00	sheeting, shirting and drills		56,000			1,700	water and steam	900	198 cards, 3 ww, 13 boilers

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1916-17	Davison's		sheeting, shirting, bag goods and drills		56,000				1,700	water and steam	900	3 ww, 13 boilers, 198 cards, receivers operating May, 1916
1918-19	Dockhams	\$800,000.00	brown sheetings, shirting and drills		57,000				1,400	water and elec.	800	Jacob Phinizy, pres, Geo. H. Leitner, supt., also 300 broad looms
1920	Davisons	\$800,000.00	sheeting, osnaburgs, twills and drills		57,000				1,700	water and steam	900	3 ww, 13 boilers, 198 cards, Jacob Phinizy, pres and Geo. Leitner, supt
1922	Davisons	\$800,000.00	sheeting, osnaburgs, kahki cloth, twills and drills		58,000				1,700	water and steam	900	3 ww, 13 boilers, 198 cards, Jacob Phinizy, pres and Geo. Leitner, supt, Gvill, Hickman & Vaucl. mills
1927-28	Davisons	\$700,000.00	sheetings, twills, shirtings, sateens, print cloth and drills		96,864	240			2,654	water and steam	1,500	4 ww, 16 boilers, 43 pickers, 260 cards, includes Grantvll, Hickman, Vaocluse and Warren mills
1930	Davisons	\$700,000.00	batting, book, tobacco & shade cloths, broadcloths, corduroys, c overt cloths & more		96,864	240			2,582	water, steam, elec.	1,500	2 ww, 16 boilers, 43 pickers, 260 cards
1932	Davisons	\$700,000.00	tobacco & shade cloths, drills & twills, sateens, sheet, uph. fabri cs, etc.		97,088	940			2,587	water, steam, elec.	1,250	3 ww, 16 boilers, 270 cards, includes all company mills
1935	Davisons	\$700,000.00	tobacco & shade cloths, drills & twills, sateens, sheet, uph. fabri cs, etc.		97,088	940			2,587	water, steam, elec.	1,250	3 ww, 16 boilers, 270 cards, includes all company mills

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1940	Davisons	\$1,961,440.00	drills and twills, sheetings, osnaburgs, jeans, sateens, shade cloths etc,	99,328	2,640		2,202	water, steam, elec.	2,800	listing includes Vaucluse & Warren Mills, 357 cards, 3 ww, 16 boilers, dye, bleach, finish
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Part II: Graniteville Manufacturing Technology
Robert Stewart

As a prelude to starting the Graniteville Manufacturing Company, William Gregg studied textile manufacturing from 1837 to 1845. In a report to stockholders in 1867 Gregg noted:

I felt I was fully competent to the task of rearing this work without the aid of manufacturing engineers, a class of men generally employed for such purposes, but who would necessarily be strangers in our country, whose undivided services would be obtained at a high cost, and who might prove to be impracticable, wasteful, or possibly worse, speculative, aiming solely to make money on their own account, out of us.¹

Manufacturing enterprises during the early years of the nineteenth century, before the development of efficient and cost effective steam engines, had to be located near a source of power. In practical terms this meant water power. One of the major attractions of William Gregg's property on Horse Creek was an abundant supply of water with sufficient fall to supply enough power to justify capital investment in a moderately sized mill.

Gregg, acting as chief engineer, and Julius Petsch, who had formerly been employed as foremen of a Charleston iron foundry, began development of a 7,952 acre parcel of Horse Creek land in January of 1846.² Their primary concern was to get power to the site and the first work concentrated on construction of the canal and dams.³ The dam is located at the site of the Graniteville Mill and the canal impounds Horse Creek starting about one mile upstream from the dam site. The canal is 37 feet wide at the surface, 15 feet wide at the bottom and 5 feet deep.⁴ The canal provides a fall of 40 feet.

By May work on the water supply system was far enough along to start work on mill foundations and support footings and walls for a water wheel and power transmission system. A saw mill went on stream and cut between five and six million board feet of lumber over a two year period. Advertisements in local papers indicated that jobs were available for experienced masons and carpenters to work on the factory building. By June of 1846 Gregg started building the factory using local materials such as granite and pine.

¹ Wm. Gregg, President. Reports of the President and Treasurer - Graniteville Manufacturing Company (Augusta, GA: Constitutionalist Book and Job Printing Office, 1867), 1.

² Ibid., 5.

³ Lander, 58.

⁴ "Graniteville Manufacturing Company" *Charleston Courier* (23 March 1848):2.

Construction did not proceed smoothly. William Murdoch, Gregg's supervisor for stone work, believed that the masonry work was not to specification. The masonry contractor abandoned the job and later sued Gregg for \$10,000. Gregg settled the suit for \$1,000. Much of the carpentry work was poorly done. The floors had to be relaid and all window sashes discarded and replaced. Gregg sued the carpenter and recovered most of his additional costs.⁵

The mill was completed between April and November of 1847. The design duplicated features of a mill plan common in New England. The main building has two storeys with a full attic lit by skylights. It is 350 feet long and 50 feet wide constructed with ashlar granite. The roof consists of shingles over lath.⁶ Two towers mark the front of the mill. The towers contain stairwells and are equipped with fire resistant doors to prevent fire from spreading from floor to floor. Building the towers external to the building itself also maintained valuable floor space in the mill for manufacturing. The towers are surmounted by cupolas, one of which housed a bell. A historic photograph probably dating from the 1870s shows thirty-seven double hung windows on each floor of the front of the mill, sufficient in a narrow building to provide the center of the mill with good light. The mill was heated from its opening by steam pipes.

John Blackwood, a minority stockholder in the enterprise, indicated in an 1847 letter to John Springs III that, while the mill was under construction, Gregg changed his mind about a water wheel and instead installed a turbine. Blackwood said, "It is of French origin I believe and is called the "Turbine" probably after the inventor. It is very complicated and consequently would be difficult of description, otherwise I would attempt to give you an idea of its construction - It is however upon the jet principle that it acts and from what little I know of machinery and the hydrostatics and hydraulics I should think it [would?] act with wonderful pressure. If it succeeds, you may judge what our advantage it will be over every other wheel - when I state that ability others have only about 60 to 65 per cent of the power of the head upon the machinery attached to them, this can (have) 80 per cent." ⁷

Analysis of the extant foundation under the mill produced evidence that the mill was originally designed with a conventional pit for a water wheel to provide power to the mill. The eastern end of the Graniteville mill has an outer wall about five feet thick and an inner wall four feet thick. The walls are about seven and a half feet apart. The ends of the space encompassed by these walls are delimited by stone walls about twenty-four feet apart. The bottom of the space is filled with mud. There is eighteen feet between the top of the mud and the joists supporting the

⁵ Gregg, 5:1847.

⁶ David D. Wallace, "The Founding of Graniteville." Cotton History Review (January 1960), 19.

⁷ John J. Blackwood to John Springs III, 8 November 1847, Springs Family Papers, SHC, University of North Carolina at Chapel Hill.

factory floor above. The design of this portion of the foundation is consistent with John Blackwood's comments regarding the change from a water wheel to a turbine.

The history of turbine development gives additional information about the type of turbine probably installed at Graniteville. The first practical turbine was developed by Benoit Fourneyron, a French engineer, and placed in service in 1827. Several years passed before Fourneyron adapted his wheel to the requirements of textile mills, but by 1839-1840, reports on the turbine were appearing in the American publication, *Journal of the Franklin Institute*. Between 1842 and 1846 Elwood Morris installed small Fourneyron turbines in factories around Philadelphia. The first Fourneyron turbine installed in a major northern mill was at Fall River, Massachusetts in 1844. Blackwood's description of the 1847 installation of a turbine at Graniteville is, certainly evidence of a very early first use of this power source in a major Southern mill. The Graniteville turbine was most probably a Fourneyron. There was another French designed turbine, the Jonval axial-flow wheel, which was in use at this time, however the first Jonval in the United States was not installed until 1850.⁸

By 1858 three turbines powered the mill. Two were rated at 120 horsepower and the third supplied 170 horsepower. One of the 120 horsepower wheels normally powered the saw mill but could be hooked up to the main power shaft if one of the other wheels failed.⁹

The Fourneyron and other early turbines exerted their force through a vertical shafts. The conventional way of providing power to textile machinery was through overhead or underfloor pulleys mounted on horizontal shafts. A major problem was to change the direction of power transmission from rotary vertical to rotary horizontal. A letter by William Gregg in 1865 implies that the horizontal cross shafting of the mill was driven by gearing from a vertical shaft placed close to the wall of the cloth room.¹⁰ This could be accomplished by using bevel or miter gears on the vertical shaft which would mate with similar gears on the horizontal shaft.

By 1858 the mill was equipped with a gas works which made illuminating gas through the destructive distillation of rosin. Gregg's house was also fitted out with gas light which was installed in 1857 - the mill probably had its gas plant around the same time.¹¹

⁸ Louis C. Hunter, History of Industrial Power in the United States 1780-1930 Volume I: Waterpower (Charlottesville: University Press of Virginia, 1979), 323-324.

⁹ President's and Treasurer's Report to the Stockholders of the Graniteville Manufacturing Company (1858): 19-20. Gregg-Graniteville Collection, U.S.C. Aiken, Aiken, SC.

¹⁰ Letter dated September 1st 1865 from William Gregg to Jones - Folder 289. Gregg-Graniteville Collection, U.S.C. Aiken, Aiken, SC.

¹¹ Wallace 23:1960

Gregg was unable to hire a full management and engineering team, he was directly involved in all aspects of mill operation: "If a dam broke, I had to be there in the mud, for no one about could do the work so cheaply and securely as myself. If a wheel broke down and I happened to be away on business, an express or telegraph came after me."¹²

Gregg frequently visited mills and textile machinery manufacturers in Massachusetts. The Graniteville mill adopted manufacturing technology developed in the north promptly. Evidence for this exists in Gregg's letters to suppliers, agents and textile manufacturers. One major hazard in nineteenth century textile manufacturing existed in the picker house. This is the location where cotton bales containing trash and woody matter are opened, the cotton is partially cleaned and formed into a uniform lap. Picker rooms are typically dusty and the environment is conducive to accidental fires. The cotton often contained tinder-like inclusions called "matches" which could be set off by a spark or occasionally by spontaneous combustion. By mid-century most mills had built their picker houses separated from the main mill.

Sprinkler systems offered a means of dousing any fires that did start. In a letter dated July 5, 1860, to his agent, James Montgomery Gregg discusses his design for a sprinkler system similar to those he saw in Chicopee and Holyoke, Massachusetts.¹³ By September Gregg was anxiously anticipating receipt of more pipes for his sprinkler system. He maintains, in a letter to his agent that he should have ordered all his piping from Morris Trasker in Philadelphia rather than a portion from Whitin in Massachusetts. He expresses fear that there may be a fire in the picker room. He also tells of plans to erect a brick water reservoir for fire protection 210 feet above the factory yard.¹⁴ The pipes were finally shipped on October 11 and in place by November 5. Gregg issued a check for the pipes but complains that the shut-off valves leak badly and asks for a fix.

On starting up the mill in 1848, the mill was set up to produce light weight sheetings (osnaburgs¹⁵) and shirtings from yarn. In slow periods the mill accumulated a large inventory and had two to three thousand bales of cloth. Evidently quality was superior, Gregg's cloth took the

¹² Gregg 6:1867

¹³ Letter dated July 5, 1860 from William Gregg to James Montgomery - Folder 289. Gregg- Graniteville Collection, U.S.C. Aiken, Aiken, SC.

¹⁴ Letter dated September 19, 1860 from William Gregg to James Montgomery - Folder 289. Gregg- Graniteville Collection, U.S.C. Aiken, Aiken, SC.

¹⁵ Osnaburg: A plain heavy coarse yarn - medium or heavy weight cloth of low construction made wholly of short staple grade cotton. Used in bags, tarpaulins etc.

premium at all the great fairs in the United States, as well as at the World's fair in London.¹⁶

Much of Gregg's correspondence relating to technical matters and machinery concerns quick delivery to insure receipt before the Civil War began. Most of the machinery was received and installed before hostilities. Production exceeded demand at the outbreak of war and Gregg visited Nashville, Memphis, Richmond and New Orleans to drum up trade. In this he was successful and expanded his customer base. During the war he generated a backlog of orders with delivery to be made at Graniteville.¹⁷

Graniteville Manufacturing Company was profitable during the war, even after paying taxes to the State and Confederate governments and supplying additional goods to the government which were often confiscated in lieu of cash. While the war raged, Gregg steadily built up sterling reserves and stockpiled cotton with a view to being in an advantageous position when the war ended. In spite of short-sighted directors and stockholders who demanded large dividends, Gregg successfully saved enough to re-equip and enlarge the mill in spite of extensive losses on Confederate currency and bonds.¹⁸ Gregg traveled to Europe to purchase new equipment immediately after the war. On his return he found:

. . . the new buildings in an unfinished state, all the old buildings to be refloored and reroofed, a new (water) wheel to be put in, a job of five months, shafting to re-arrange, old machinery to take out, and repack, and new machinery to put in, with a scanty supply of mechanical labor, the refitting of the railroads in the South having absorbed much of the skillful mechanical industry of our country.¹⁹

Water power at the mill had been neglected during the war. The dams and canal were in dangerous condition. Horse Creek below the mill was filled with fallen trees and trash so that its bed was raised four feet. This reduced the available head correspondingly and cut available power by ten percent. Dredging the creek bed took several months. Starting in May of 1866 a new turbine was installed which produced about two-hundred horsepower. Gregg stated that this wheel would give enough supplemental power to run the mill except in periods of very low water or in the event that the mill's main turbine failed. He also considered that the time was close when

¹⁶ Gregg 11:1847

¹⁷ Gregg 7:1867

¹⁸ Elinor Fogle. "William Gregg and the One Hundred and Twenty-Six Years of the Graniteville Company," (Augusta College, May 22, 1972), 9.

¹⁹ Gregg 18:1867

the company should buy a steam engine.²⁰

At the end of the war the company had installed three hundred and thirty six looms. Additional manufacturing space was built and Gregg purchased two hundred and fifty eight more looms at twenty-eight dollars each. He also acquired twenty specimen looms. These would be used to weave small quantities of fabric for salesmen to show to prospective buyers. They could also be used to weave fabrics to fit a customer's special pattern or requirement. Demand for special fabrics and weaves was, in all likelihood, strong as Gregg then added ten more specimen looms from an unnamed New England builder.²¹ His master weaver found the English looms to be "infinitely superior" to the New England looms in speed, quantity and quality of light fine cloth and recommended purchasing two hundred and twenty more English fast looms. To keep up with the new looms, Gregg needed eight to twelve more carding machines.

By the time all the new machinery was in place and operating in 1866, the mill was capable of producing a much wider variety of fabrics. The original set up worked best with yarn consisting of fourteen hanks of 2,520 feet in length to the pound. The new machinery worked best on yarn having thirty six hanks to the pound, 2,520 feet of thread to the hank. However, it could handle yarn down to four hanks to the pound for weaving the old style of sheetings. It could also run up to one hundred hanks to the pound for weaving fine cambrics or figured goods.²²

In the period from May of 1865 to May of 1866 the mill was turning out 61,850 yards per week. Production decreased during the next six month period to 34,704 yards per week then increased to 98,000 yards per week. Maximum capacity of the new mill was estimated at 120,000 yards per week.

By 1882 it was apparent that water power was not sufficient to run the mill continuously. H.H. Hickman, president of the Graniteville Manufacturing Company at that time saw the interruptions as more of a labor problem than a production problem. In his report of 1882 he declared:

"The producing classes of your employees - the carders, the spinners, the spoolers, the warpers, weavers and the like - whose labors stop with every stopping of the Mill, can ill afford to endure this loss of time; for with them "time is money," in the most literal meaning of the word.

²⁰ Ibid 19 :1867

²¹ Most of Gregg's domestic machinery, according to correspondence of this period, came from the Whitin Machine Company.

²² Gregg 12:1867

Idleness is demoralizing, disorganizing in its influence upon some of them as well as upon others not similarly employed, and is calculated to make them discontented, and so incline the best and most industrious of them to seek more constant employment elsewhere."

Hickman's solution to the power problem was to add a steam engine of 300 HP to supplement the water power in times of drought. He also added substantial head gates at the mouth of the canal to protect against floods and deepened the canal to provide for more water capacity. Another improvement at this time was to replace the wooden penstocks to the turbines with riveted iron tubes.

Additional warehouse space was added in 1890 and 1892. By 1914 all the original textile machinery had been replaced with the exception of machines in the picking house. Picking and opening equipment was upgraded between 1921 and 1925. Two new turbines were installed in 1917. These were horizontal shaft water wheels, belted to line shafting and produced 350 HP and 450 HP respectively.²³

Electricity came to Graniteville in the fall of 1891 under the supervision of Alvin Etheredge of Graniteville. A separate company, named the Cotton Shoals Electric Company was set up to provide electricity to the mill and the town.²⁴ The company gradually switched over to electric motors for power between 1901 and 1927. Some water power continued to be used until the 1940s.

In 1938 the 350 HP turbine at the southern end of the mill was replaced with a hydro-electric system. A Leffel Hydraulic vertical shaft type F turbine capable of producing 615 HP at 327 RPM with 40 ²⁵feet of head pressure was coupled to a Westinghouse three-phase, 60 cycle alternating current generator. The generator delivered 583 KVA at 600 volts. It was rated at 640 amperes. Excitation power was provide by a smaller generator mounted vertically on a shaft common to both generators. The exciter provided 125 volts at 60 amperes. This system ran until the early 1990s.

Technology at Graniteville was continuously improved in a successful effort to remain competitive in the marketplace. Its machinery was not always the latest model. Rather, its managers tended to view productivity in terms of "Whether the cost of product from an old

²³ Leavelle McCampbell. Graniteville, 1845-1935, (Graniteville, SC: Graniteville Manufacturing Company, 1935), 24.

²⁴ Helen A.B. Etheredge in a 1931 letter to the editor of "The State."

²⁵ McCampbell 1935:24

machine which has been completely depreciated is higher than the cost from a new machine which is subject to depreciation and interest based on its purchase price." Its managers were innovative and purchased machinery that was flexible enough to be changed over to produce fabric demanded by the whims of fashion or other markets. Graniteville's significance derives from its founder, William Gregg who overcame a hostile investment climate to pioneer capital investment in southern textile manufacturing.

Appendix A:
Company Inventory of 1858-based on the Treasurer's Report

The Graniteville Company now own and have in good repair, in Factory Yard:

Factory Building of granite two and one-half stories high 50 x 350 feet inside, cloth room attached; single story of brick 24 x 82 feet.

- 1 Picker House, two stories, of granite, 40 x 82 feet.
- 1 Machine Shop 35 x 75 feet
- 1 Blacksmith shop and boiler room (brick)
- 1 Waste, House
- 1 Grist Mill

Gas Works, complete for making gas from rosin

- 1 Carpenter's Shop, with planing mills circular saws, etc. 40 x 80 feet.
- 1 Saw Mill (circular saw) 20 x 80 feet.
- 1 Office 20 x 40 feet.
- 1 Cloth Warehouse 125 x 40 feet
- 1 Cotton Warehouse 100 x 40 feet.
- 1 Cotton Warehouse two stories high, 120 x 60 feet.

Outside in village , we have on Canal Street: a commodious hotel, five (5) stores, one 110 x 25 feet; ten (10) two story upright houses; and about fourteen (14) double cottages, with nine rooms and seventy-five (75) small cottages; a neat two-story school house, also about ten thousand (10,000) acres of land.

The machinery consists of:

- 2 Willows
- 7 Pickers
- 126 thirty-inch cards
- 2 lap Doublers
- 12 Railway Heads with boxes
- 560 Speeder Spindles
- 8 Drawing Frames
- 560 Spooling Frames
- 7 Warping Frames
- 9 Dressing Frames

334 Looms
2 Engine Lathes
1 Turning Lathes
1 Screw and bolt Cutter
1 Upright Drill
1 Planer

We have for driving all the machinery: three turbine wheels, one of 170 horse power; two of 120 horsepower each, one is kept as an extra one for running Saw Mill and for use in case of accident to others.

Relief in the enterprise was manifested by the increased holdings by prominent stockholders. At the meeting of June 22, 1859, Gregg held 79 shares (par value still \$500). J.J. Blackwood 108; Rev and James P. Boyce 100, and the estate of Joel Smith 100. The four largest stockholders in 1846 owned 25% of the shares; in 1859 the four largest owners held 53.75%.

Appendix B
Specifications for Cotton Machinery for Graniteville Mfg. Co.
Graniteville, S.C. July 21, 1900
(for Hickman Mill, built across the street from original Graniteville Mill)

15,500 spindles - Lockwood Greene & Co. Mill Architects and Engineers 131 Devonshire Street
Boston, Mass. July 21, 1900

**Specifications for Ring Spinning Frames built by American Machine Co. Ltd.,
Pawtucket, R.I.**

Warp Frame No. of frames = 40 No. of Spindles in each = 204 Gauge = 3"
Diam & kind of rings - 2" double adjustable on plate holders Length of traverse = 7"
Kind of spindle - Draper #2 small cup
Diam and kind of bottom rollers - usual single boss Kind of top rollers - solid single boss
Diam of cylinders 7" Spare top rolls - 10% No. of revs from spindle to cylinder 57:8
Diameter of whirl 7/8" Draughts - 6.92 - 7.06 - 7.21 No. of yarn to be spun 13 single roving to be
used
Kind of creel - two story Traverse and diam bobbin in creel 8" x 4" kind of under clearer - round
kind of top clearer - flat
Kind of traveller cleaner lip on plate holder
Kind of guide board lifter - Walmsley
Kind of separator - R.C. 4" blade
Kind of guide wire - Pontiac
Kind of saddle - Dixons
Kind of roving guide - brass on steel rod Twist gears to give 17.13 turns per inch - and one turn
each way
Outboard bearing - yes
Belted rom above or below - above and vertical quarter turn
General dimensions Length of frame 27" 7" Width of frame 38" Diameter and face of driving
pulley 13" x 3 1/4" T & L for 3" belt speed of spindle 7700 rev - speed of front roll 146 roll.
Other - 4 of these frames to have combination warp and fill building motions, also extra ring rails.
also extra ring roll with 1 3/8" diameter rings.
Speakman lever screws.

**Specifications for Ring Spinning Frames built by American Machine Co. Ltd.,
Pawtucket, R.I.**

Filling Frame No. of frames = 36
No. Of Spindles in each = 204 Gauge = 3" Diam &
kind of rings - 1 3/8" diam double adjustable on plate holders

Length of traverse = 7"

Kind of spindle - Draper #2 warp cup Diam and kind of bottom rollers - usual single boss

Kind of top rollers - solid single boss Diam of cylinders 7" Spare top rolls - 10% No. of revs from spindle to cylinder 57:8 Diameter of whirl 7/8" Draughts - 7.37 - 7.53 - 7.71 No. of yarn to be spun 13 single roving to be used

Kind of creel - two story Traverse and diam bobbin in creel 8" x 4" kind of under clearer - round kind of top clearer - flat

Kind of traveller cleaner lip on plate holder

Kind of guide board lifter - Walmsley

Kind of separator - R.C. 4" blade

Kind of guide wire - Pontiac

Kind of saddle - Dixons

Kind of roving guide - brass on steel rod Twist gears to give 17.13 turns per inch - and one turn each way Outboard bearing - yes Belted rom above or below - above and vertical quarter turn

General dimensions Length of frame 27" 7" Width of frame 38" Diameter and face of driving pulley 14" x 3 1/4" T & L for 3" belt speed of spindle 6200 rev - speed of front roll 162 rev.

Other - 4 of these frames to have combination warp and fill building motions, also extra ring rails. also extra ring roll with 1 3/8" dia. rings. Speakman lever screws.

Specifications of Spoolers built by The Draper Company, Hopedale, Mass.

No. of spoolers - 6 No. of Spindles in Each - 140 Length of traverse - 6" Gauge 5 1/4"

Kind of spindle - single rail Dimensions of spools 4 1/2" x 6"

Kind of warp bobbin Draper #2 Traverse of warp bobbin 7" Diam of spinning rings 2" No. of yarn to be spooled - No. 13

Kind of bobbin holder - Improved Wade

Kind of thread guide - Improved Northrop No Bobbin chute - but with endless belt bobbin delivery With top creels and boxes made of steel Rev. of spindle to one cylinder 3.75 Belted rom above and vertical Total length 32' 0" Width over all 4' _" Diameter and face of driving pulleys 12" x 2 1/2" T. & L. Speed of spindle 750 rev. Spec. of Warpers Mfg. by Draper No. of warpers and V creels - 8 Right hand - 4; Left hand - 4 Rise or drop roll machine - rise - Length of cylinder 54" diam 12" Diam of beam heads 27" - barrel - usual Length between beam heads 54 1/4" Beams run with threads over No. of 3000 yd Rapsper beam - usual for #13 yarn Beam doffing device - yes Beam doffer to run by hand Expanding front comb and back reed - yes No. of Warper beams wanted - 50 ordered by mill (note the document says 'ordered')

Spool bearings cut in standard - yes

Iron or glass creel steps - glass

No. & Size of spools in creel 420 (4 1/2" x 6")

Kind of cone drive - Hicks Common or special clock - common

Kind of stop motion Walmsley

REV of pulley to one of cylinder 4 1/2 avg belted from above and vertical

Space occupied by warper 8" 6" x 15' 3 1/2"
Diameter and face of driving pulleys 10 x 2 T & L; 10 x 1 3/4
Slow motion Pulley 180 rev per min

Specifications for slashers built by Lowell Machine Shop

No. of machines 2 Width of cylinder face 60"
Kind of cylinders - best copper cavity
Diam of cylinders 7' and 5'
Width between heads - narrowest and widest loom beams 32" - 40"
Diam of head loom beams 18"
Expanding and contracting comb - yes with 350 dents
Size box with 2 copper rolls
string comb - yes and 1 brass immersion roll -
Cut marker - best Reducing valve and pressure gauge - yes
slow motion side shaft - yes
Two steam traps - yes
revolving yarn beam presser - yes
Friction wind - cone drive (yes)
Driven from above and vertical
Length 44' 1/2"
Diameter and face of driving pulleys 12" x 3 3/8"
Slow motion 12" x 1 7/8"
Width of frame 5' 10 1/2"
Width over all 9' at head pulley 400 rpm
Size kettle two 160 gallons each
Overhead tramway 40 feet long for 2 sets
Differential pulley block 2

Specifications for Picking Machinery built by American Machine Co. Ltd., Pawtucket, R.I.

Opener

No. of machines 4 Width of machines for 30" beater
No. and kind of beaters one, special Automatic feeder yes
Large hopper
Kind of cleaning trunk double - 20" long Gal Iron pipe from trunk to breaker - yes
Sprinklers in cleaning trunk yes LOA 11' 10 3/4"

Intermediate

(other choices on form is breaker or finisher)
No. of machines 5 width of machines 42 1/2" for 40" laps

No. and kind of beater one, usual -
counter shaft on machine- yes Improved, new evener Calender rolls - yes
Apron to double 4 laps - yes
LOA 16' 2" Diameter and face of pulleys 16" x 4 1/4" width on beater shaft 6' 8 1/2" size of
beater pulleys 9" x 4" - 1500 rev.

Finisher

No. of machines 5 width 42 1/2" for 40" laps
No. and kind of beater - one, Kirschner with counter shaft on machine Improved, new evener
Patent calender rolls with apron to double 4 laps weight of lap 12 oz.
Pounds of laps per set in 60 hours = 13000 LOA 16" 2" - width on beater shaft 6" 8 1/2"
Diam and face of pulleys 16" 4 1/4" T & L 34" x 4" width on beater shaft 6' 8 1/2" - size of beater
pulleys)" x 4" 1500 rev.

Specifications for Cards built by American Machine Co., Pawtucket, R.I.

No. of cards 64 kind of card R.T.F. to take 40" lap
Dimensions of cylinder on wire 50" x 40"
Dimensions of doffer on wire 26" x 40"
No. of flats 110 dimensions of flat on wire 1 3/8" x 40"
Dimensions of licker in on wire 9" x 40" draughts 80.00-85.00-90.00 Sliver Grain per yard 60
coiler included - diam. of coiler 12 x 36 Kind of card clothing - best plow ground Gears to drive
doffer 14.65 - 15.42 16.19
Space occupied 10' 5" width OA 5' 6 1/6"
Diameter and face of driving pulley 20" x 3" T. & L.
Product 1200 lbs in 66 hours Cylinder 165 rev per min

Specifications for Drawing Frames built by American Machine Co., Pawtucket, R.I.

First Draw

No. of Frames 2 with 5 heads in each 6 deliveries in each head - 60 deliveries total
No. of doublings into one 6 No. of slivers to a boss 6 length of rolls 16" -
No. of rolls 4 Coilers included
Stop motion - patent electric best both back and front
Draught 5.85 - 5.94- 6.03 Speed of front roll 325 rev. LOA 50-51/2" Diam & height of cans 122
x 36"

Second Drawing Frame

Mfg American Machine Co, Ltd, Pawtucket No. of frames 2 No. of heads in each 5 Deliveries in
each head 6 - No. of deliveries 60 No. of doublings into one 6
No. of slivers to a boss 6 No of rolls 4 - interlocking and metallic No. of bosses to a roll one cans

12" x 36 coilers used Rev. of front roll to driving pulley 15.11
Patent electric stop motion (best)
Draught 5.85 - 5.94 - 6.03
Grains in one yard sliver 60 LOA 50' 5 1/2"
diam & face of pulleys 16" x 4"
Speed of front roll 325 rev 4 drawing frames to have one dynamo for electric stop motion- weight relieving motion.

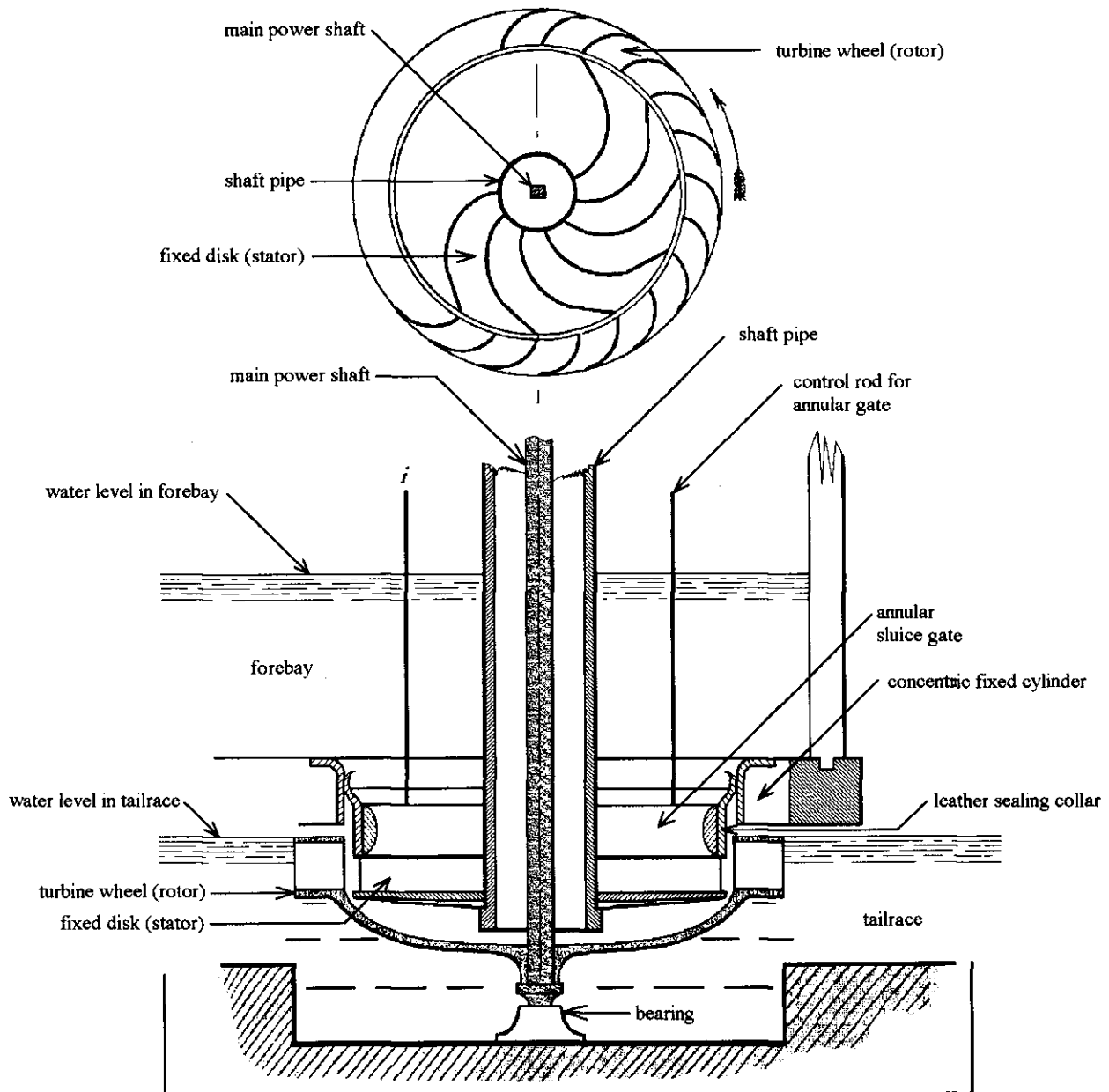
Specifications for Slubbing Frames built by American Machine Co., Pawtucket, R.I.

No. of Frames 10- with 60 spindles in each
Length of traverse 11" diam of full bobbins 5 1/2"
Length of rollers 19 1/2" auger 9 3/4"
Kind of top roller - front shell leather draughts 4 1/2" - 4 3/4" 5"
what hank roving to be made .66 LOA 27" 4 1/2"
Diam & face of driving pulleys 16" x 3" T. & L.
Speed of spindle 710 rev Width over all 6"

Specifications for Roving Frames built by American Machine Co. Ltd., Pawtucket, R.I.

No. of frames 16 -
No. of spindles ea. 120 Length of traverse 8"
diam of full bobbins 4" Length of rollers 24" gauge 62
No of spindles to a roller 8 Diameter & kind of fluted bottom roller - Front shell Leather
What hank roving to be made 1.92
Kind of saddle - common Rev of flyer to one of pulley 2.7027 draughts 5 3/4 - 6.0 - 6 1/4 Creel
for double roving

Appendix C:
Graniteville Technology Illustrations



The Forneyron outward-flow turbine - vertical section elevation.
Similar to the first turbine installed at Graniteville Manufacturing Company in 1847

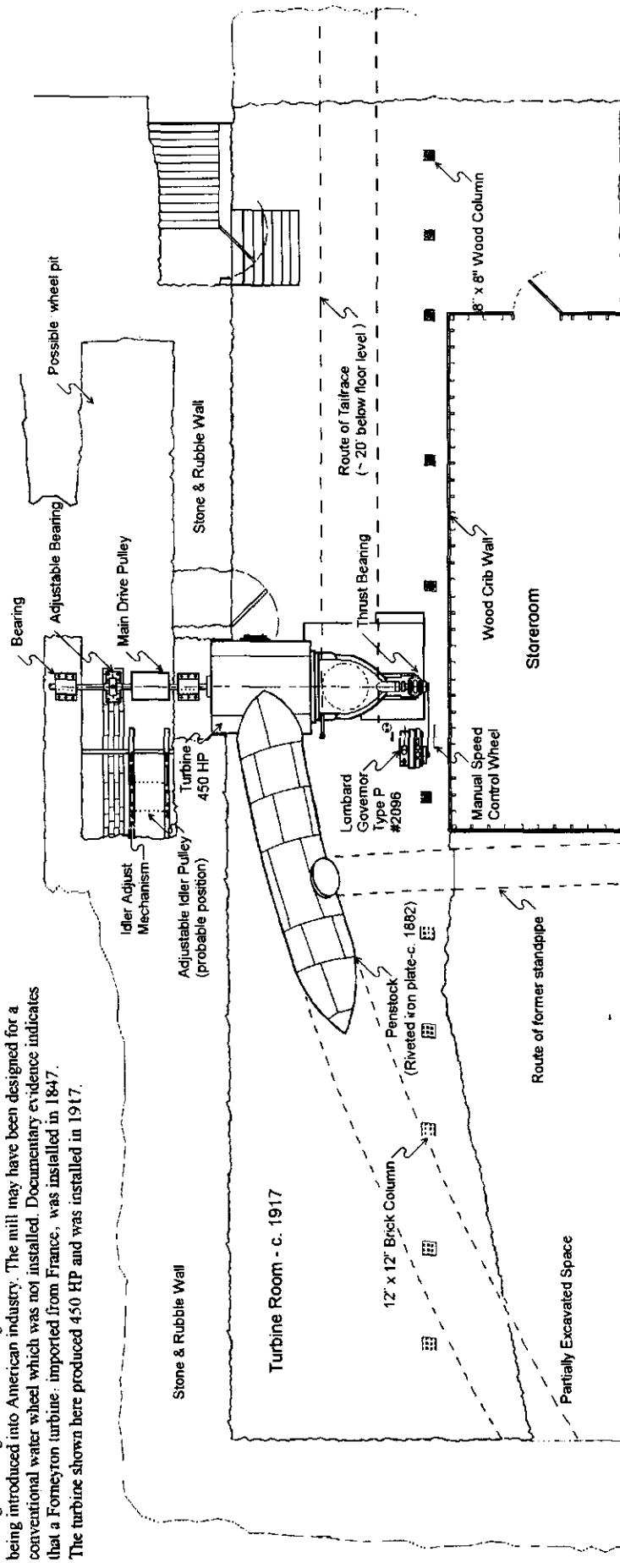
Source: A History of Water Power in the United States
by Louis C. Hunter
Adapted and digitized using Corel50 Software
by R. C. Stewart

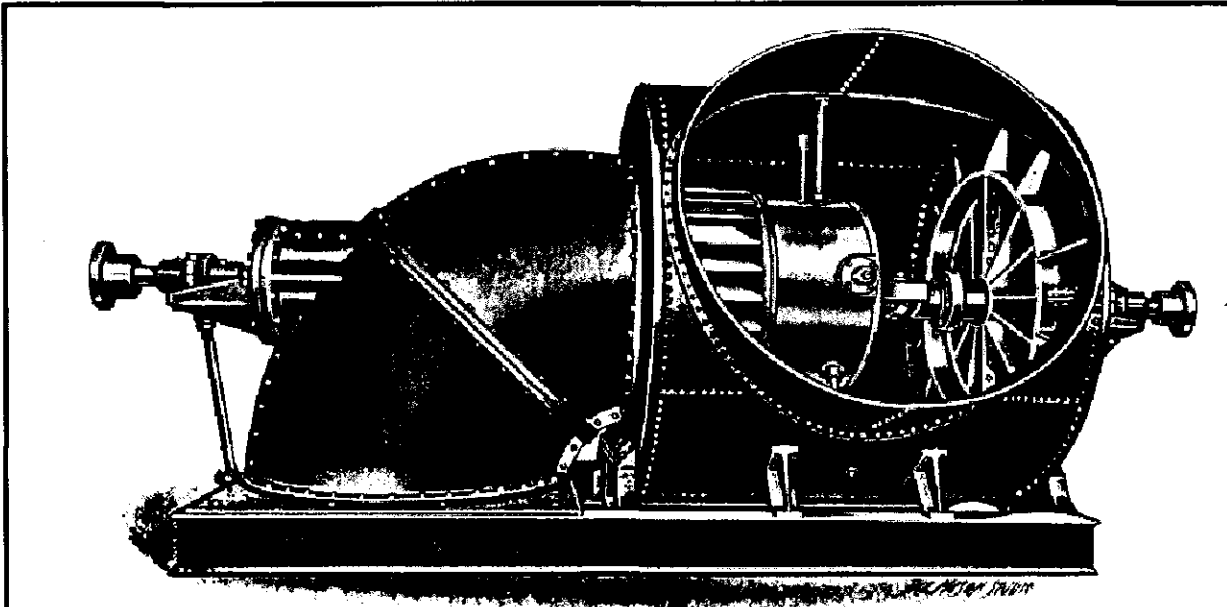
Graniteville Mill, Graniteville, South Carolina

Turbine Room - North Basement Level

Graniteville mill was powered by water from a canal and system of feeder ponds. Some water power was used until the 1940s. Traces of earlier water power systems are apparent in this area of the mill. The iron penstock probably dates to modifications made in 1882. A pit, 7.5' wide, 24' long and at least 18" high, appears to be part of the original design of the building. The mill was built at a time when turbines were being introduced into American industry. The mill may have been designed for a conventional water wheel which was not installed. Documentary evidence indicates that a Foreneyron turbine, imported from France, was installed in 1847. The turbine shown here produced 450 HP and was installed in 1917.

A standpipe is no longer extant in this installation. The standpipe went up to the top of the building and extended a few feet above canal water level. It served to relieve pressure build-up when the water flowing through the turbine was cut off. It would also serve to moderate flow to the turbine as power demand fluctuated.

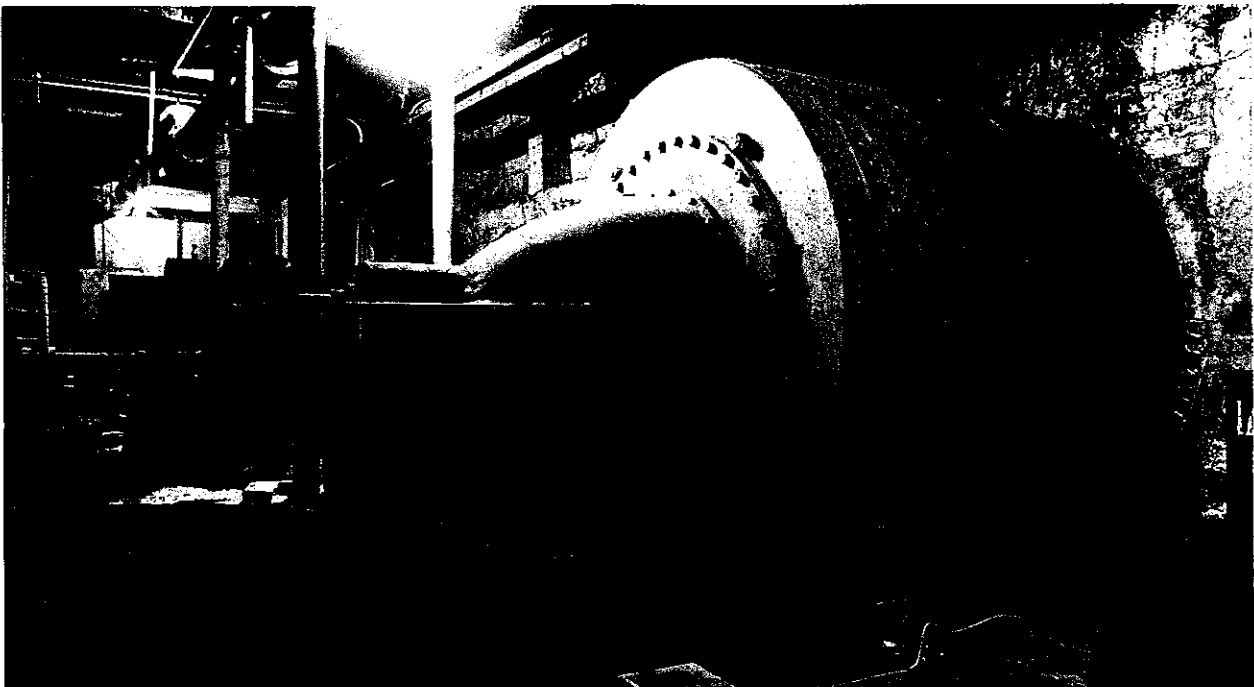




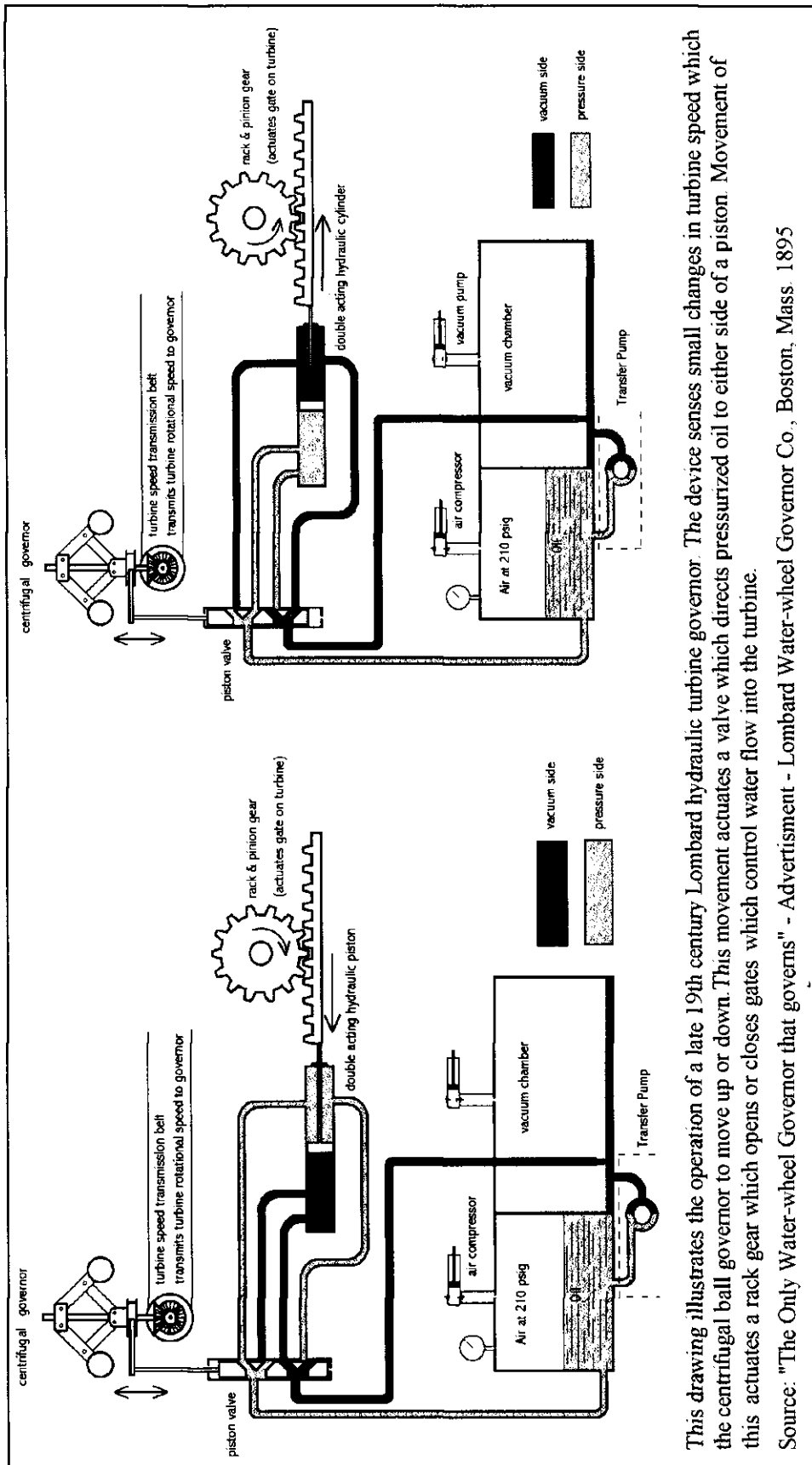
Source: Holyoke Machine Company Catalogue #13 (1929)

Single Horizontal Cylinder Gate Hercules Turbine in steel case with cast iron quarter-turn. Draft tube of cast-iron, or with steel extension.

Note: View is through penstock opening. Ring structure inside the case at right absorbs thrust when the turbine is operating. This turbine appears to be similar to the one installed in the north basement of Graniteville mill in 1917. In the Graniteville installation the penstock entered the turbine case on the far side of the drawing.

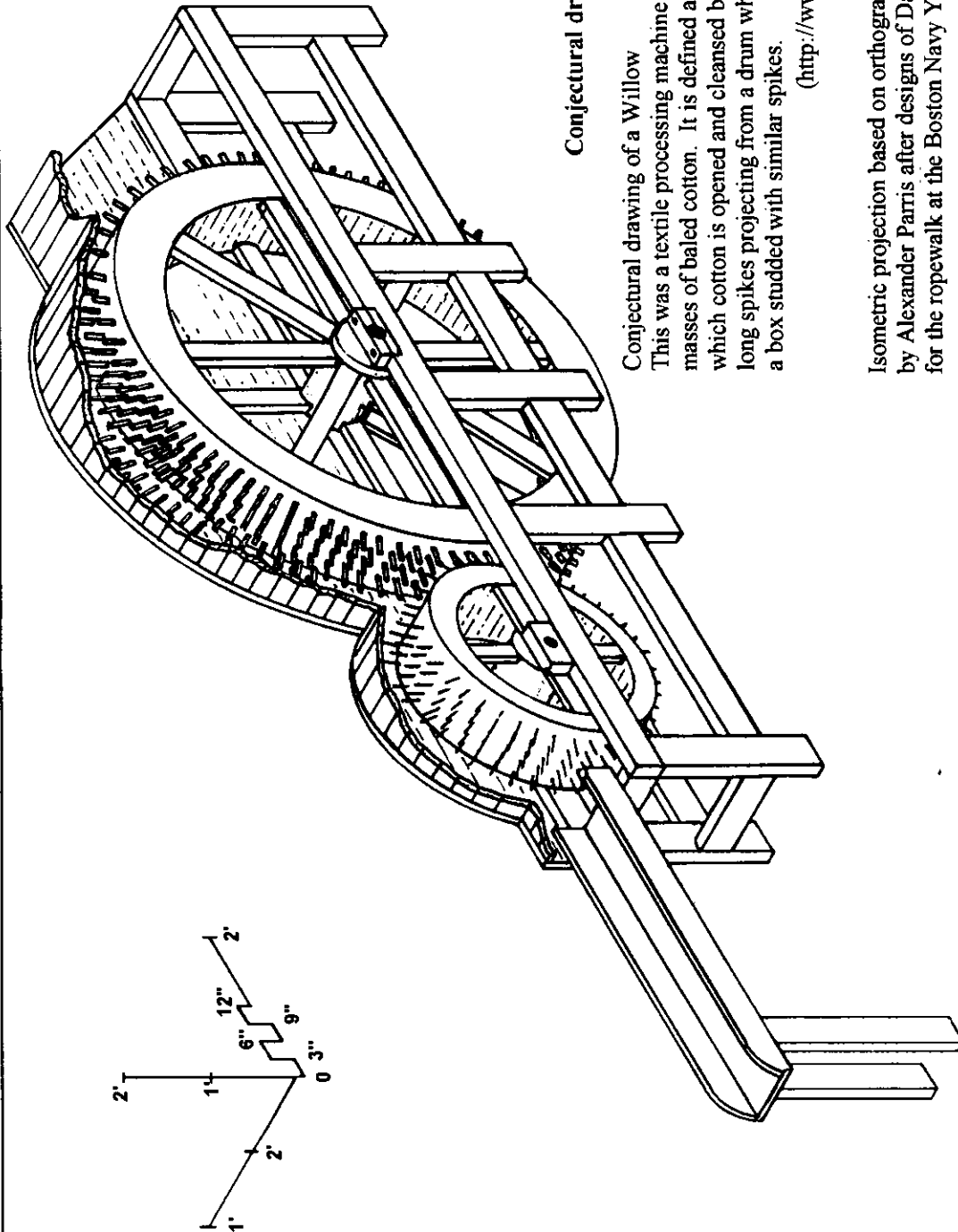


View of turbine in north basement of Graniteville mill - 1999. The penstock enters the turbine case at the bottom rear of the turbine case. At this point there is about forty feet of head pressure provided by the Horse Creek Canal. The turbine draft tube extends down about twenty feet to the tailrace. The turbine generated 450 HP and was coupled to pulley and leather belt drive which provided power to the machinery above.



This drawing illustrates the operation of a late 19th century Lombard hydraulic turbine governor. The device senses small changes in turbine speed which the centrifugal ball governor to move up or down. This movement actuates a valve which directs pressurized oil to either side of a piston. Movement of this actuates a rack gear which opens or closes gates which control water flow into the turbine.

Source: "The Only Water-wheel Governor that governs" - Advertisement - Lombard Water-wheel Governor Co., Boston, Mass. 1895



Conjectural drawing of a Willow

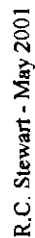
Conjectural drawing of a Willow

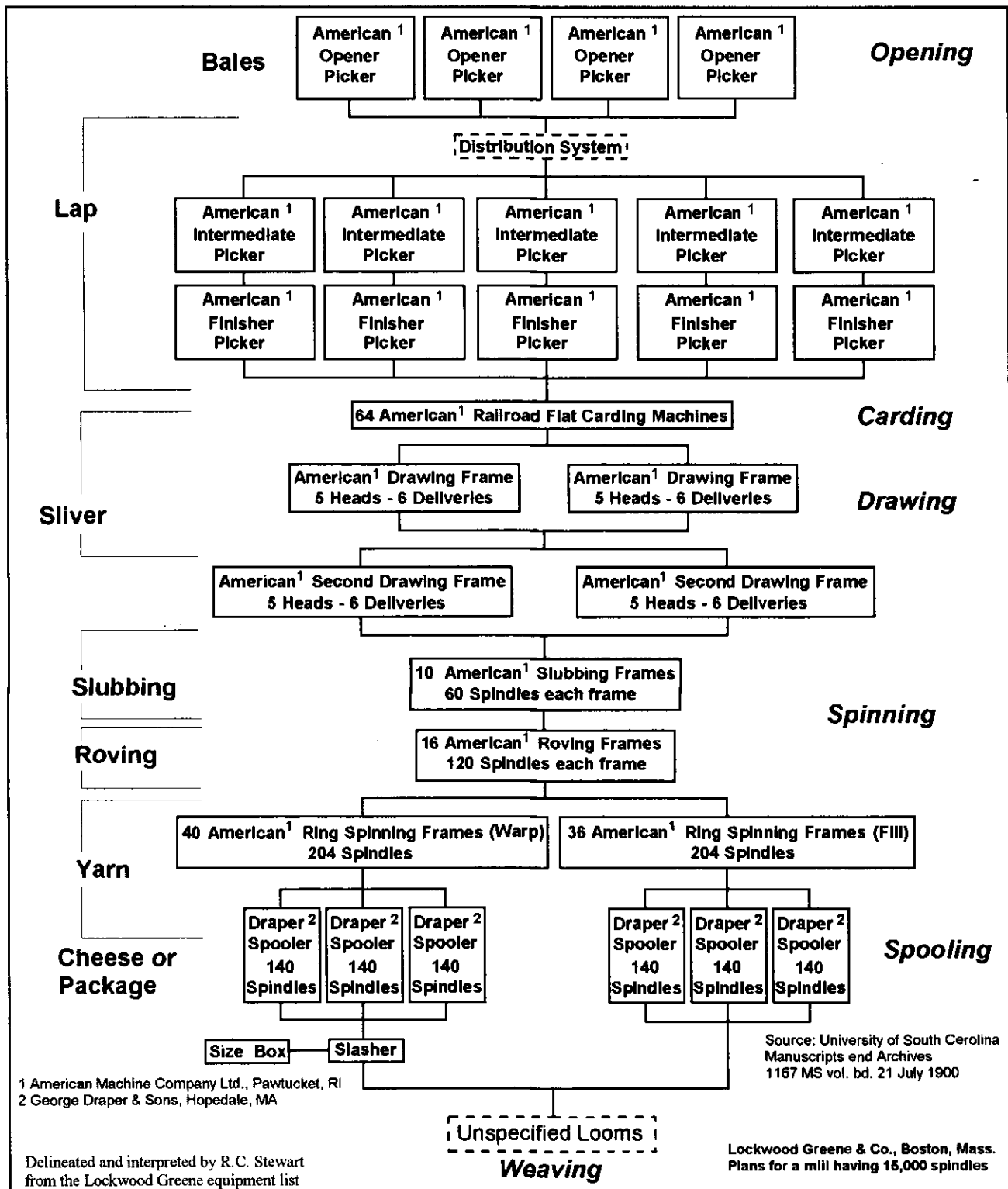
This was a textile processing machine used to break up masses of baled cotton. It is defined as a machine in which cotton is opened and cleansed by the action of long spikes projecting from a drum which revolves in a box studded with similar spikes.

(<http://www.dictionary.com>)

Isometric projection based on orthographic drawings by Alexander Parris after designs of Daniel Treadwell for the ropewalk at the Boston Navy Yard - c. 1830.

Delineated by R.C. Stewart - 2001





Textile Manufacturing Process at Graniteville Manufacturing Company - circa. 1900